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BRITISH AND FOREIGN.

Edited by

JAMES BRITTEN, F.L.S.,

SENIOR ASSISTANT, DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY), SOUTH KENSINGTON.

VOL. XXXI.

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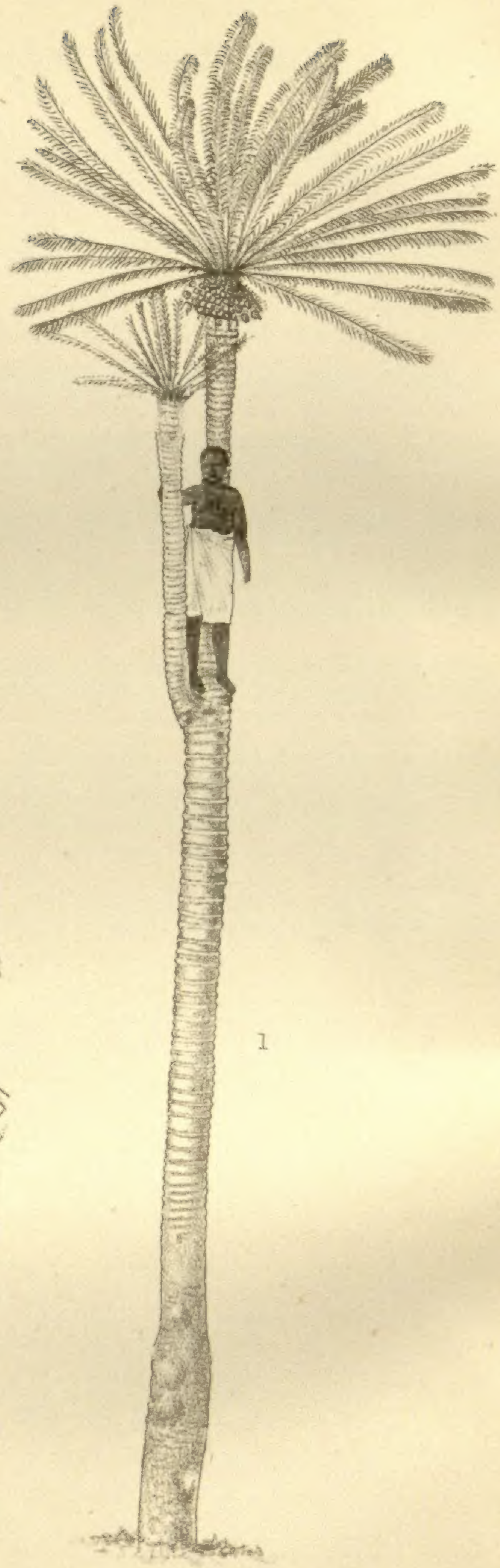

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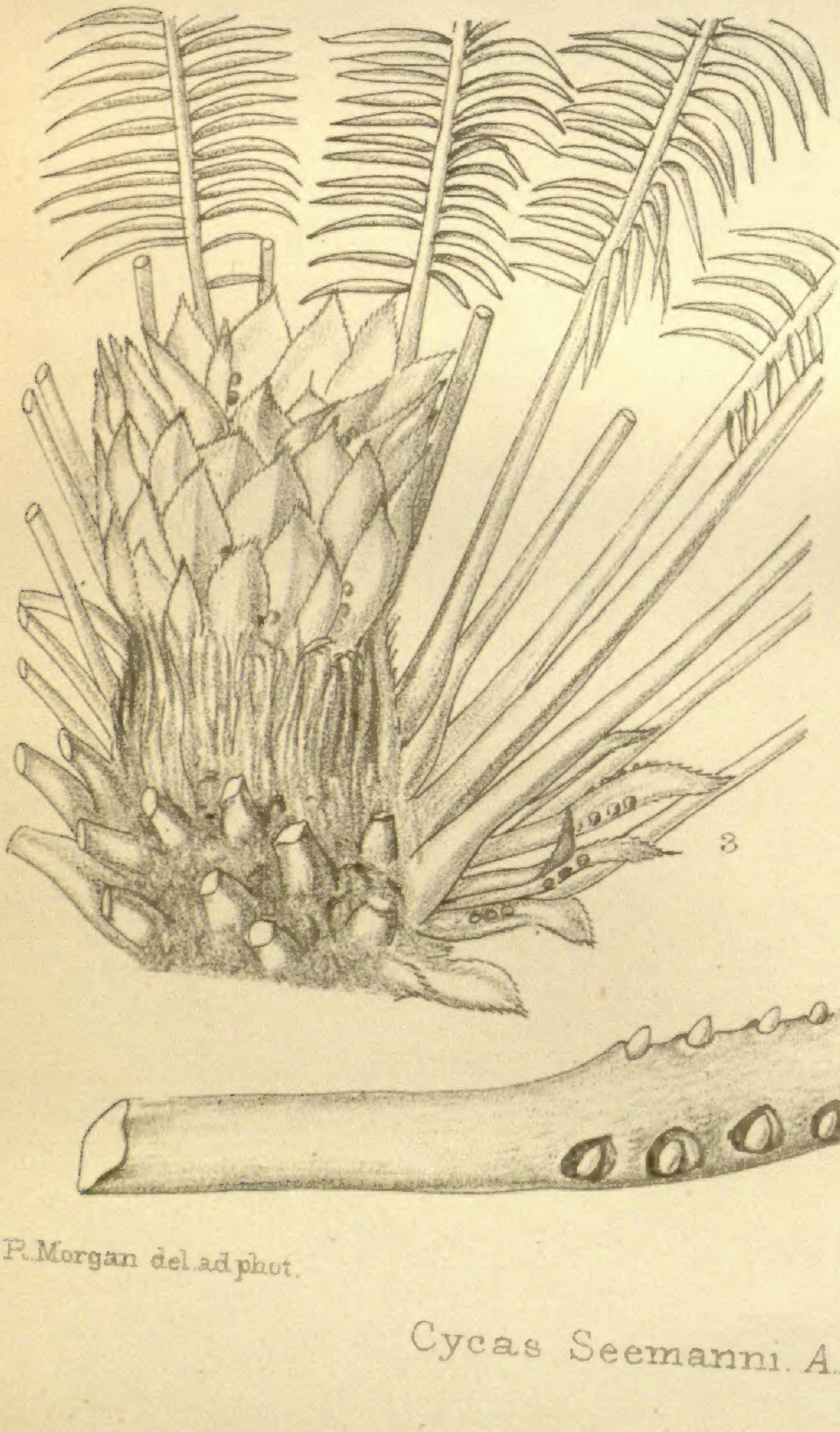

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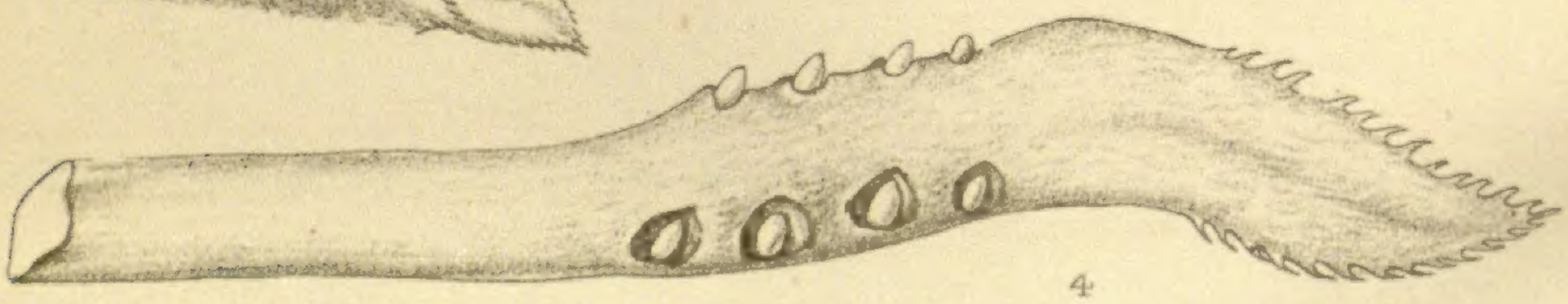

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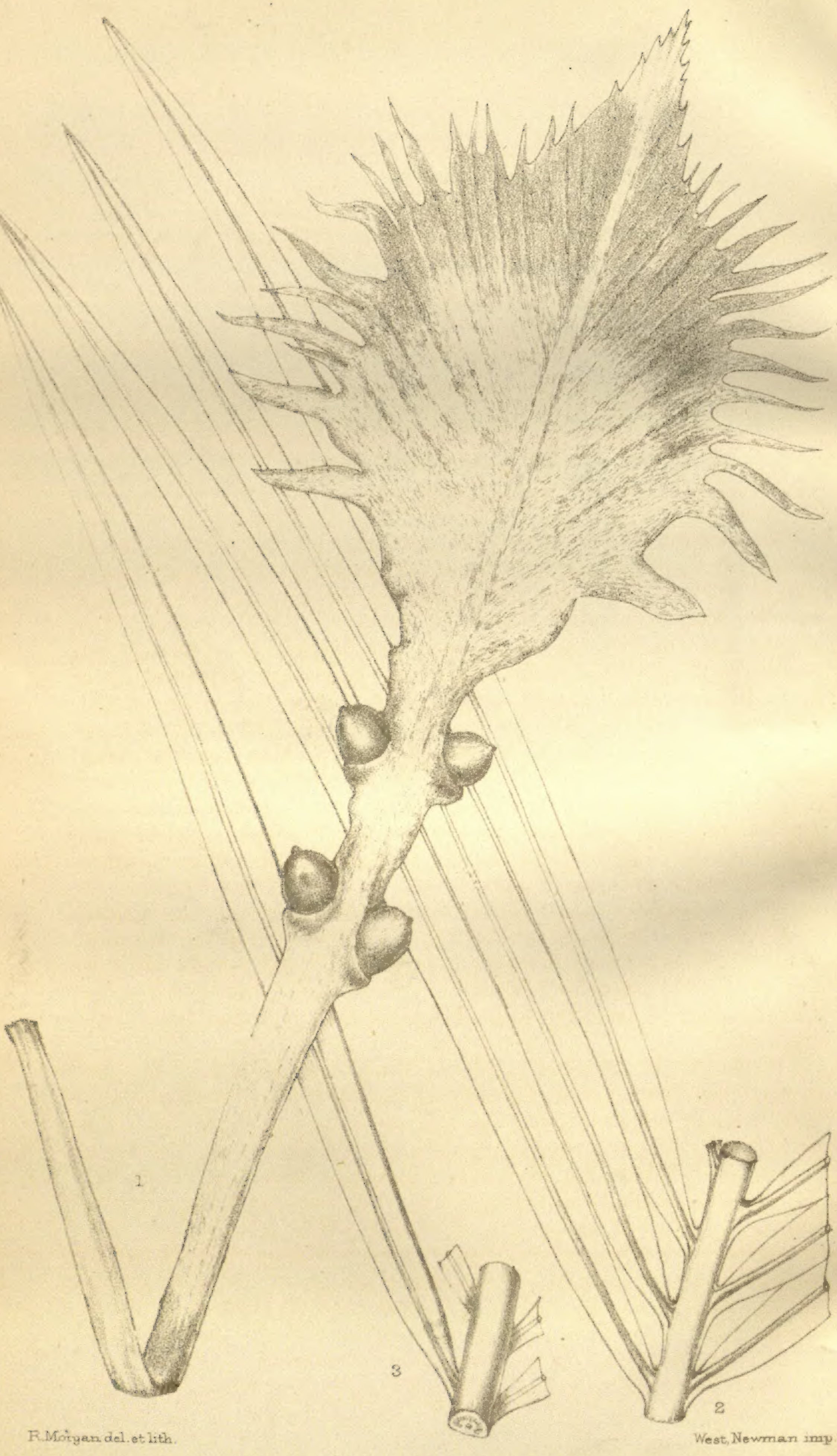

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Cycas Taiwaniana, *sp. nov.*

THE

JOURNAL OF BOTANY

BRITISH AND FOREIGN.

ON *CYCAS TAIWANIANA*, SP. NOV., AND *C. SEEMANNI* A.Br.

By W. Carruthers, F.R.S.

(Plates 330, 331).

The characters employed in grouping the different species of the genus *Cycas* are not altogether satisfactory. No doubt this is due to the absence of complete materials for the knowledge of the species, either in cultivation or in herbaria. The portions of the plants necessarily best known are the leaves; they have been employed as a basis of classification, the characters depended upon being the revolute margins, or the more or less flat nature of the segments. But the fact that in the most characteristic revolute species (*C. revoluta* L.) there are plants with flat margins shows that this can be of little value, while the revolute species from India (*C. Beddomei* Dyer) has its affinities with the *C. circinalis* and the Australian species, and not with *C. revoluta* or *C. inermis*. Neither can the presence of tomentum on the spadices be of much value, as this depends in several species on the age of the spadix. It appears to me, looking at the materials existing in the Herbarium of the British Museum, and at the published figures and descriptions, that the form of the barren expansion in the female spadices will supply, in the present state of our knowledge, better characters for grouping than any hitherto suggested. Three types are present :—

First. Where the apex is dilated into a rhomboidal lamina, with teeth on the two upper margins of the rhomb, the terminal one being usually much larger. To this group belong *C. circinalis*, *C. Rumphii*, *C. Seemanni*, the Australian species, &c.

Second. Where the lamina is longer than broad, and is deeply cut along the sides into spiny teeth. To this belong *C. revoluta* Linn., *C. inermis* Lour., and *C. Taiwaniana* here described.

Third. Where the lamina is broader than long, and the spiny teeth are borne chiefly on the upper margin. To this group belong the species discovered and figured by W. Griffith,—*C. pectinata* Griff., *C. Jenkinsiana* Griff., *C. macrocarpa* Griff. The materials for the history of this group are still very imperfect.

In the herbarium of Dr. Hance, which was some years ago

acquired by the British Museum, there is part of a leaf and three foliar spadices of a *Cycas* from the Island of Formosa. It belongs to the group of *C. revoluta*, though the barren lamina approaches the species of the first group. It may be thus described :—

Cycas Taiwaniana, sp. nov.—Leaf with numerous erecto-patent subopposite segments, springing from a terete rachis ; petiole unknown ; segments flat, linear-lanceolate (5 to 7 in. long, rather more than $\frac{1}{4}$ in. broad), decreasing below to a base about half the width of the segment, decurrent, but scarcely turned upwards on the rachis, shining, paler on the under surface. Male cone unknown. Female spadices nearly glabrous, long, with slender stipes ; fruit (3 or 4) borne above the middle ; lamina nearly as broad as long, deeply cut on both sides into linear acuminate spines of the same substance as the lamina; terminal spine somewhat longer, broad and serrate.

The specific name is from Tai-wan, the native name of Formosa. No more definite information is contained on the label than that the specimens were collected in the island of Formosa by Mr. Swinhoe, and sent to Dr. Hance in the autumn of 1867, from whose herbarium, as I have said, came the specimen in the British Museum on which the species is founded.

In the *Flora Vitiensis* Dr. Seemann described a *Cycas* which he found in the Fiji Islands, and referred to *C. circinalis* L. A. Braun subsequently pointed out characters by which he separated it from *C. circinalis* L. and named it *C. Seemanni*. Baron von Mueller has described the plant at length. Dr. Masters having lately given the Botanical Department a series of photographs of the plant, it seemed to the Editor desirable to give an illustration of this fine Cycad, discovered by and named after the founder of this Journal. It has a stem thirty feet high. In the specimen figured from the photograph, an adventitious bud, developed two-thirds up the stem, has maintained its connection with the stem and developed into a branch. The stem is marked by alternate constrictions and enlargements, caused by the alternation of the fruiting spadices and the normal leaves. The scars left by the spadices are smaller, and these being food-consuming organs, the stem is constricted where they have been borne. The petiole is unarmed, and the numerous segments (50 to 70) are papyraceous, spreading and curved; they gradually decrease from a little above the constricted base, and end in a long acuminate apex. The male cone is two feet long, and the scales have a short, acute, ascending apex on the upper part of the cone. The female spadix bears from six to eight fruits ; it has a dilated, subtriangular apex, with small spines along the upper margins and a terminal one scarcely larger than the others. It was found in Viti-Levu and Ovalau by Dr. Seemann.

In the Museum Herbarium there are specimens of a Cycad from the Tonga Islands, collected by Banks and Solander in Capt. Cook's first voyage, which was referred by Dr. Seemann with his Fijian plant to *C. circinalis* L. It differs in the texture and form of the segments of the leaves, and the presence of a large terminal spine on the spadix ; but until more materials are obtained from the Tonga,

Fiji, New Caledonia and neighbouring islands, it is undesirable to add new names to the genus, as they may represent only unimportant geographical modifications.

Explanations of Plates.

Tab. 330.—*Cycas Seemanni* A. Br. Representing the general aspect of the plant, the male and the female fruiting heads, with a single spadix, all somewhat reduced in size from photographs.

Tab. 331.—*Cycas Taiwaniana*, from specimen in the British Museum.

AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Continued from vol. xxx., p. 341.)

Group 8. Bellardiani (= Glandulosi Focke).—*St. mostly prostrate and roundish*, rooting, often glaucous. *All the stems densely clothed with stalked glands, bristles, acicles and prickles of various sizes.* Prickles more frequently weak than in the Radulæ and the Koehleriani; often subulate. Pan. racemose or with racemose lateral branches at the base. *All the lts. distinctly stalked.* Stipules filiform. Stam. rather frequently falling short of the styles, or barely equalling them.

Usually rather small low-growing plants.

A. Stalked glands very unequal; some of those on the pan. longer than the diameter of the ped.:—(74) *viridis*; (75) *Durotrigum*; (76) *direxiramus*; (77) *saxicolus*; (78) *Bellardi*; (79) *serpens*; (80) *hirtus* and vars. All nearly allied plants.

B. Stalked glands short; those on the pan. hidden in the dense hair or felt ("sunken"), or at least shorter than the diameter of the ped.:—(81) *tereticaulis*; (82) *? oigocladus* and vars.

74. R. viridis Kalt. *Journ. Bot.* 1890, pp. 134, 166. *R. incultus* Wirtg. *Syn. R. G.* p. 369.—St., petioles, pan.-rachides and ped. all thickly clothed with very unequal prickles, acicles, bristles and stalked glands, usually densely hairy, more rarely almost glabrous. St. long, prostrate, roundish or bluntly angular. Prickles mostly short and declining, conical, broad based. L. chiefly 5-nate-pedate. *Lts.* pale green, shining above, more or less hairy on both sides, rather coarsely and irregularly but *not deeply dentate-serrate*; *term.* roundish or broadly ovate-cuspidate or elliptic-acuminate *from a slightly emarginate base*, often with 1 or 2 lobate dentitions above the middle (usually on one side only). *Pan.* usually rather long and lax, *pyramidal, with straight rachis* and numerous nearly patent few-flowered branches, clothed like the st. except in having still slenderer aciculate prickles. Sep. attenuate-acuminate, purple with stalked glands, patent in fr. *Pet. very long and narrow, pointed and cuneate-based*, white or slightly pinkish. Stam. white (or reddening later), usually far surpassing the styles. In several counties (N. & S.).

When growing in woods, very similar to *R. pallidus* W. & N., but readily distinguished from it by its more unequal prickles, acicles and stalked glands and less diffusely branched pan., and also usually by its rounder, less acuminate, less deeply toothed and less cordate-based term. lt. In open sunny places the plant becomes much stouter, its l. lose their soft hairs, and its broadly pyramidal and nearly naked panicles are enormous. It then recalls the next species and *rosaceus*.

75. R. DUROTRIGUM R. P. Murray, *Journ. Bot.* 1892, p. 15.—*St.* prostrate, bluntly angular, apparently quite *glabrous*, yellowish on the under side, bright red above, *densely clothed with slender acicles, bristles and stalked glands of all sizes. Prickles also remarkably crowded, very long-based, very slender, declining, falcate and deflexed.* L. 5-nate-pedate to 3-nate, subpersistent. *Lts.* green, *subglabrous, acutely doubly incise-serrate, acuminate;* term. broadly roundish-ovate or slightly obovate, with long, gradually acuminate point and subcordate base. *Pan.* lax, *with flexuose* hairy *rachis* (armed like the st.) and *crowded ultra-axillary rounded top;* its lower l. 5-nate. Dors.

R. Durotrigum seems nearly allied to the open-ground states of *R. viridis* (not yet found in Dors.), but it differs from them by its slenderer and far more crowded and still more unequal prickles and acicles and various gland-tipped organs,—the prickles also being longer-based and more variable in direction; by the far less hairy lts., with their longer points and deeply incise-serrate acute toothing; by the more interrupted pan. and flexuose and still more strongly armed rachis; and by the small pinkish pet. Its sep. are attenuate and patent as in *viridis*, or somewhat loosely reflexed in fr., but they seem more hirsute, and so perhaps rather less conspicuously glandular. Its stam. are usually shorter and its styles proportionately longer, though apparently somewhat variable in length in both species. Its ultra-axillary branches are also usually more crowded together, and its lower branches more distant from them and from each other, so (together with the flexuose rachis) giving the pan. as a whole a less markedly pyramidal outline than in *viridis*.

So far found only in Dors., though in at least three or four distinct localities and in considerable quantity, and showing no noticeable variation under changed conditions of shade and soil.

76. R. DIVEXIRAMUS P. J. Muell. — St., petioles, pan.-rachides and ped. armed and clothed much as in *R. viridis*. St. long, prostrate, *slender, roundish*, with rather many scattered and clustered hairs, *dark purple*. L. 3–5-nate-pedate, mostly 3–nate. *Lts. yellowish-green, thin and flexible*, subglabrous above, *soft with many short shining hairs beneath, with acute crowded teeth*, which are nearly simple in the 3-nate l. but become more compound in the 5-nate; *term. obovate-acuminate* or cuspidate-acuminate, *with narrowed and somewhat obtusangular truncate base. Pan. only slightly narrowing above into the conspicuously cylindrical ultra-axillary top*, with many longish patent or even divaricate 1–3-flowered branches and subsessile term. fl.; the slightly flexuose rachis and the ped. more or less felted above, densely hairy, *with* many *very slender aciculate*

prickles and crowded unequal acicles and stalked glands. Sep. triangular-ovate with very long points, externally green, aciculate and glandular, clasping fr. *Pet. small* (scarcely exceeding stam.), *oblong*, distant, white. Stam. white, exceeding greenish styles. Woods and bushy places (Glost., Heref., Dev.).

A distinct-looking plant; when fresh appearing just intermediate between *R. longithyrsiger* and *R. viridis*, and frequently growing with the former, though not observed by me with the latter.

77. R. SAXICOLUS P. J. Muell.—"*St. angular, nearly glabrous.* L. mostly 5-nate. *Lts. with short soft hairs beneath, shining*, especially on the nerves; term. broadly ovate, pointed. Inflorescence often elongated, lax; branches often with aggregated ped., densely patent-hairy, furnished with crowded glands, bristles and acicles. Sep. patent in fr. Pet. narrow, white." The foregoing is a translation of Dr. Focke's recently published description of this species. Speaking of its distribution in Germany, he adds, "The typical form is rare; but similar forms, approaching *R. viridis*, *hirtus* or *Koehleri*, are very common." Plants from Oxf., Suss. and Monm. that he has thus named for me have *brownish polished st.*, with very unequal broad-based prickles and acicles and comparatively few stalked glands, *l. greyish green beneath, remarkably hairy pan.-rachis with most of the unequal-stalked glands hidden in the hair*, the pan. branches crowded above into a rather narrow, rounded, cylindrical top, with short, distant, few-flowered branches below, and very small pinkish pet.

There is so much difference of opinion amongst us in England as to the distinctive characters of the three next "species," that it seems desirable for me in their case to give a translation of Dr. Focke's descriptions.

78. R. BELLARDI W. & N.?, *R. dentatus* Blox. "(*R. glandulosus* and *R. hybridus* autor. mult.).—St. only indistinctly angled near the top, glaucous, sparsely hairy, densely clad with unequal weak prickles, glandular bristles and stalked glands. *L. 3-nate. Lts. almost equal in size*, light green, rather *evenly and finely serrate*, green and hairy on both sides; *term. elliptic*, with a lanceolate or linear-lanceolate mucronate point. *Inflorescence short;* the lower branchlets erect-patent, usually 3-flowered; the upper straggling, 1-flowered; rachides and ped. hairy, with fine acicles, red with numerous unequal-stalked glands and glandular bristles. *Sep. embracing the young fr.* after flowering. Pet. narrow, spathulate, white. Stam. fully as high as the styles. Drupelets glabrous. Fr. small, aromatic." "In very few brambles," Dr. Focke adds, "is the form so constant as in *R. Bellardii* " (the spelling preferred by him); "hence it can readily be recognized everywhere, although the characters otherwise afford no distinct means of differentiation from the forms of the *R. hirtus* group. On cool, wooded soils, especially in springy ground."

Prof. Babington's fuller description in *Brit. Rubi, down to the middle of p. 248*, agrees admirably with this; as both do with Welsh specimens of mine, which Dr. Focke refers here as "quite

typical." The 3-nate l., with large, nearly equal, finely serrate lts., and the very short patent-branched, few-flowered pan., are the most characteristic features.

79. R. SERPENS Weihe.—"Differs from *R. Bellardii* chiefly in the shape of the l. Stalked glands many, but mostly not, or but little, exceeding the felted hairs of the pan.-rachis; a few longer. Ped. long, finely aciculate. Stam. scarcely exceeding the styles. *L.* of the barren st. 3-nate and *5-nate-pedate*. *Lts.* green and hairy on both sides, *unequally serrate; term.* 3–5 times longer than its stalk, *ovate, cordate-ovate or oblong-obovate with emarginate base*, cuspidate. Rather polymorphic; chiefly distinguishable by the short stalk of the term. lt." Mostly confined to wooded hills. Found in great quantity on the hills above Tintern, Monm., by Rev. A. Ley, a small prostrate plant with very long lts. and a markedly flexuose short pan.

80. R. HIRTUS W. & K.—" St. prostrate from a low base, more rarely climbing, roundish, only indistinctly angled near the top, more or less hairy, *densely covered with stalked glands, glandular bristles and acicles*. *L. principally 3-nate;* in strong shoots mixed with 5-nate ones. *Lts. coarsely* and (in their upper part) often unequally serrate, dark green and with strigulose hairs above, paler, densely hairy on the nerves beneath; term. 3–4 times as long as its stalk, generally broadly elliptic from a rounded base, gradually narrowed to a short point, in other respects not unfrequently varying in shape. Flowering branches not seldom sessile, many-flowered; the normal ones, on the branches of the 2-year-old st., of moderate size, leafy below; *rachides* of the inflorescence violet or red-brown *with* stalked glands and *many long glandular bristles*. Sep. erect after flowering. Pet. oblong, white. Stam. numerous, rather exceeding the styles. Fr. globular, with small drupelets. Very polymorphic and widely distributed . . . the type does not occur in the W. German ranges and Switzerland, but countless indefinable vars. and closely related forms are to be found."

If we compare with this closing remark what Dr. Focke says on this species in his paper in *Journ. Bot.* 1890, p. 134, we shall not wonder at the difficulty which the plant as an aggregate causes us in England. We have, however, two marked forms which are somewhat widely distributed, and seem worth distinguishing as vars. :—

b. *R. rotundifolius* Blox. (non Weihe). *R. amictus* P. J. Muell. *Engl. Bot.* Suppl. to 3rd ed. pp. 117, 118.—*St. deeply striate, hairy* and (as are the many unequal declining prickles and acicles) *yellowish;* acicles and crowded stalked glands mostly very short. *Lts. very thin and ultimately glabrous-looking beneath*, though still clothed with minute white hairs; *term. roundish elliptic, with short point.* Pan.-rachis and ped. with dense long hair and exceedingly mixed brownish armature, the largest prickles being remarkably long and slender; fl. of the upper branches often having long divaricate ped. Sep. with long points, ultimately clasping. A constant and abundant form in thickets and bushy hedges in the Teign Valley, S. Dev. (where both pan. and lts. are often enormous), and in parts of N. Dev. Apparently very local in other counties.

c. *R. Kaltenbachii* Metsch.—St. more angular and deeply striate, with fewer hairs and acicles, many stalked glands and subulate declining prickles. L. more frequently 5-nate. *Lts. narrower, obovate-acuminate, almost simply dentate-serrate, but with the larger teeth patent or recurved. Pan.* large, *pyramidal, drooping*, with several many-flowered branches below mostly erect-patent, but sometimes patent or even divaricate; the upper branches 1- or few-flowered with many simple floral l.; *the rachis and ped. dark with purplish black, stalked glands.* Usually a handsome plant with showy fl. (Glost., Somers.).

R. pendulinus P. J. Muell. (*Journ. Bot.* 1886, p. 234) and *R. velatus* Lefr. (B. E. C. Rep. 1888, p. 211; 1889, p, 254) would perhaps be best kept out of our list for the present. The former seems hardly to differ from *R. Bellardi* except by its red styles, hairy carpels and 3–5-nate l. The latter is nearer to *R. hirtus*, and (as represented by the Rev. A. Ley's Lyonshall specimen) has obovate lts. and a long, leafy, cylindrical pan. with pseudo-umbellate side branches and small pet.

B. Stalked glands of the pan. sunken, or at least shorter than the diameter of the ped.

81. R. TERETICAULIS P. J. Muell., *B. E. C. Rep.* 1888, p. 212; *Engl. Bot.*, Suppl. 3rd ed., p. 113.—*St.* roundish, *densely hairy, with* many (mostly short) stalked glands and *very slender, unequal, aciculate prickles and acicles.* L. 3–5-nate. *Lts.* acutely serrate, *green and hairy on both sides;* term. broadly elliptic or obovate, acuminate, from nearly entire or subcordate base. Pan. either simply racemose or pseudo-umbellate-racemose below; *the somewhat flexuose rachis and ped. densely felted and hairy with sunken blackish stalked glands*, more rarely with appressed felt overtopped by the short stalked glands; *long gland-tipped bristles and prickles very few or absent. Sep.* only rarely patent or ascending, *usually loosely reflexed* even in fr. "Stam. generally rather shorter than the styles, longer in flat-country forms." Heathland nr. Sprowston, Norf.; in considerable quantity.

At first sight very like *R. hirtus*, but distinguished from it without difficulty by the far more hairy st., with its very slender aciculate prickles, and by the sunken, blackish, stalked glands on the pan.

82. R. OIGOCLADUS Muell. & Lefv.? *R. fusco-ater* Angl. auct. (in part). "Near *R. omalodontos* Müll." *Fl. Plym.*; *B. E. C. Rep.* 1891, p. 332.—*St.* stout, roundish, deeply striate, glaucous, *thinly clothed with very short hair* and fairly many *very short acicles and stalked glands.* Prickles declining, much compressed; a few rather large. L. mostly 5-nate-pedate. *Lts.* rather thick, thinly hairy on both sides, *grey-green beneath*, finely serrate, all usually obovate-cuspidate; *term. broadly obovate-truncate* with cuspidate or shortly cuspidate-acuminate point, from narrow, emarginate or subcordate base. Pan. often long; the ultra-axillary part either wholly racemose with subsessile term. fl. and long-pedicelled lateral fl., or with a few 2–3-flowered branches at the base of the racemose top;

the axillary branches distant, long, chiefly racemose; *all the rachides and ped. grey-felted and hairy, with abundant sunken glands*, an occasional stalked gland about equalling the hair, and rarely a gland-tipped acicle or two; the prickles mostly few, slender, declining. *Sep.* rather long-pointed, *ashy grey, loosely reflexed in fr.* Pet. rather large, obovate. Stam. exceeding the styles. Woods (Heref. and neighbouring counties; Dev.).

Strongly recalling *R. mucronatus*, but with much hairier st. and pan., and totally different armature.

b. *R. Briggsii* Blox. *R. emersistylus* P. J. Muell. ? *Journ. Bot.* 1869, p. 33; 1878, pp. 175, 176.—L. chiefly 3-nate, with *lateral lts. gibbous and lobed below. Lts.* finely but rather more doubly serrate, *rounder and more acuminate; term. long-stalked, roundish ovate*, acuminate, *with deeply cordate base;* lateral very similar. Pan. more branched and more leafy above, with roundish lts. like those of the st. *Sep. mostly clasping in fr.* Henfield, Suss.; Bickleigh Vale, Dev. Latterly regarded by Mr. Briggs as possibly only a very strongly marked abnormal form.

c. *R. Baynalli* Blox. *Journ. Bot.* 1878, pp. 175, 176.—Very like var. b., but with somewhat slenderer and more declining *subulate prickles*, a good many *5-nate-pedate l. with all the lts. remarkably similar, thinner* and less hairy; and a *narrower pan.*, which is less leafy above and has rather distant, erect-patent, small-flowered branches. In several places in Warw.

These singular vars. seem (as Mr. Baker suggested in *Journ. Bot.* 1886, p. 75) to connect this group with *R. dumetorum* W. & N.

Group 9. Cæsii (= corylifolii Focke). — *St.* creeping or climbing from a low arch, *glaucous*, roundish or slightly angular, with many rooting branches in autumn. Prickles mostly slender, often only aciculate. Intermediate acicles and stalked glands usually few (except in some *dumetorum* forms); sometimes absent. *Lts.* broad; *bas. hardly stalked.* Stipules more or less broadened in the middle. Pan. usually rather short; its prickles mainly aciculate; its *fl. large* and its *fr.* often abortive, or *maturing only a few large drupelets.* Flowering early and late.

If we except some of the plants that go to make up the aggregate *R. dumetorum* (a link between the other Cæsii and the two preceding groups), this is a very natural group of closely allied forms,—all the more difficult to distinguish from each other for that reason, as Prof. Babington has pointed out. Whether the intermediate plants included under *R. dumetorum* are best placed here (as by Focke, who combines with them our corylifolians), or reckoned with the glandulose brambles, as apparently suggested by Mr. Warren (now Lord de Tabley) in his paper in *Journ. Bot.* 1870, or are better separated from each other and divided between the Koehleriani and Cæsii (as by Babington), is of course open to question. I can only say that the arrangement I have chosen (chiefly, as will be seen, on Mr. Warren's lines) appears to me on the whole the most natural and most convenient.

Chiefly found in hedges and waste places and on walls. Especially abundant on clay and chalk soils, where, with *R. rusticanus*,

they usually prevail to the exclusion of most other species. Much rarer on gravel and sand.

83. R. DUMETORUM W. & N. *Journ. Bot.* 1870, pp. 149–154, 169–176.—*St.* usually somewhat angular and hairy, *with numerous unequal* (mostly strong) *prickles and some* (often many) *acicles and stalked glands.* L. chiefly 5-nate-pedate. *Lts.* thick, acutely and often doubly serrate, green on both sides, paler and softly pubescent or felted beneath, *more or less* acuminate and *imbricate; bas. subsessile.* Pan. compound; *rachis* felted and hairy, *usually very strongly armed with unequal prickles, acicles and stalked glands. Sep.* grey-felted, *usually erect in fr.*, but sometimes only patent or loosely reflexed. Pet. large, roundish, hardly clawed, usually overlapping. Stam. exceeding styles.

Separated from species of the KOEHLERIANI and BELLARDIANI by the subsessile bas. lts., large roundish pet. and large drupelets, and generally by a somewhat cæsian aspect. Distinguished from other CÆSII pretty readily by the far more glandular and aciculate st. and pan.-rachis, and further to some extent by the more regular and more compound pan.; but, it must be owned, the difficulty of determination is sometimes serious enough, and is liable to be not a little aggravated by the freedom with which many of the forms hybridise.

The following appear to be the best marked of the English forms or vars. of this species:—

a. *R. ferox* Weihe. *R. horridus* Schultz.—St. subglabrous, with a good many acicles and stalked glands (mostly short). *Prickles very crowded on mature st., straight, much compressed, short-based, with long slender points.* L. almost wholly 5-nate, broad. *Term. lt.* roundish obovate-acuminate, *long-stalked, with truncate-emarginate or entire base. Pan.* usually short, and chiefly *contracted into a rather broad rounded top, armed like the st. Sep.* ovate, suddenly contracted into a long point, *clasping in fr.*, grey-felted with white margin. Pet. usually pink. St. and pan. remarkably variable in stoutness and in the amount of armature at different stages of the same plant; but when quite mature stouter and with more densely crowded prickles than in any other form. Widely but somewhat thinly distributed.

b. *R. diversifolius* (Lindl.)—Very like *R. ferox*, but with *prickles less crowded, more unequal and longer based*, the *term. lt. less roundish and more shortly stalked*, and so all the lts. more frequently imbricate; while the *pan.* is usually "*long, leafy nearly to the top, with very short axillary*, few-flowered, subracemose *branches*, often springing from every axil of the shoot." The *sep.* also are *ultimately reflexed* (though usually erect for a time) and the pet. white. Widely distributed, and locally abundant. *R. intensus* Blox. seems to be a small strongly armed state of this.

c. *pilosus* W. & N.—*All the stems hairy* and strongly armed. Prickles subpatent, from compressed bases, long, rather slender, passing gradually into crowded acicles and stalked glands. Pan. leafy nearly to the top; axillary branches longer and more distant than in *diversifolius*, corymbose, many-flowered. Sep. loosely

clasping or erect-patent. "The only member of the group with distinctly setose-hairy st." Leic. and Warw. Apparently nearest to *diversifolius*, but unknown to me.

d. *R. scabrosus* (P. J. Muell.). *R. tuberculatus* Bab.—*St.* bluntly angular, striate, slightly hairy, *with fewer and inconspicuous acicles and stalked glands. Prickles less unequal*, with stouter cushion-like bases. L. 3–5-nate-pedate, doubly dentate-serrate. *Term. lt. roundish elliptic with rather short point;* bas. (of 3-nate l.) bilobate. Pan. with corymbose-truncate ultra-axillary top and few-flowered ascending axillary branches. Sep. loosely clasping. Pet. pinkish. Apparently somewhat widely distributed, but variable.

e. *concinnus* Baker.—St. rather slender, striate, with few hairs and very scattered armature; the *long prickles and larger acicles with broad compressed bases, the stalked glands and small acicles few.* L. chiefly 3-nate. *Lts.* dark green above, much paler beneath, usually *smaller and more finely and regularly serrate* than in the other forms; term. roundish ovate or somewhat obovate-rhomboidal with very slender cuspidate-acuminate point. *Pan. elongate*, considerably glandular, rather closely felted, with narrow ultra-axillary top and long distant patent-erect branches below. Sep. patent or loosely reflexed. *Pet. smaller*, pinkish. Smaller, neater, more felted and less prickly than *diversifolius;* approaching much nearer to *corylifolius*, though still far more glandular, and with different prickles. Prickles all remarkably patent and lts. concave. A well-marked form, at all events as it occurs in Derb. Chiefly northern, so far as I have been able to observe.

(To be continued.)

The MYCETOZOA of SOUTH BEDS and NORTH HERTS.

By James Saunders.

In continuation of the papers on the flora of South Beds which have appeared in this Journal at intervals for the last ten years, the following list of Mycetozoa is given as a first instalment. The species observed in the contiguous portions of Hertfordshire are also enumerated. Some hundreds of specimens have been collected, and a still larger number have been observed in the field, but only two or three stations at most are given for each county for the ubiquitous forms.

The list contains some noteworthy species. The first place may be accorded to *Chondrioderma testaceum*, which is a new British record; but perhaps there is more interest attached to the finding of the plasmodium stage of *Badhamia inaurata*, the discovery of which was a desideratum.* It was first noticed by my son Edgar in February,

* [The plasmodium of *Badhamia pallida* Berk. is referred to by Rev. M. J. Berkeley as having been noticed by Badham at East Bergholt, in March, 1851 (*Trans. Linn. Soc.* xxi. t. 19, p. 154). Examination of the type specimen in the Kew collection proves this to be the same species as *Badhamia inaurata* of Currey.—A. L.]

1892, on decayed branches in Caddington Wood. The plasmodium s pale yellow, sometimes showing a greenish hue when creeping over a lichen-covered surface. It occurs in anastomosing veins, which often assume a fan-shape at the extremities. On several occasions the plasmodium crept into the interstices of the rotten wood, remaining there for several days before its final emergence, prior to the formation of its sporangia. So deceptive was this habit, with the fact that slimy refuse remained on the spot it had formerly occupied, that Mr. Lister as well as myself supposed that our specimens were dead. Another interesting record is that of *Physarum calidris*, which fully confirms Mr. Lister's former determination of this species as British, from the very scanty material to which he previously had access.

All the twenty-seven forms enumerated for Heath near Leighton were collected by Miss L. Bassett and Miss G. Lister. These gatherings include the rare British species *Badhamia rubiginosa* and *Reticularia Rozeana*. The species in the following list marked C. C. were collected by Mr. C. Crouch, whose accurate and persistent observations have added largely to our knowledge both of the flowering and flowerless plants of S. Beds. The Hertfordshire species marked A. E. G. have been obtained by Mr. A. E. Gibbs, F.L.S.; those marked H. E. S. by Mr. H. E. Seebohm. Nor should I omit to notice the efforts of my son, who has not only been successful in our joint excursions, but also in those he has taken independently. "Common" applies to both counties; when no time of fruiting is named, the whole year is intended.

As a guarantee of accuracy in naming, it need only be said that all specimens on which a record is based have been examined by Mr. A. Lister, or by his daughter, Miss G. Lister, to both of whom my thanks are due for their valuable assistance. Mr. Lister has also kindly read this paper in MS., and has added one or two localities. Voucher specimens of most of the rarer forms have been prepared for the British Museum Herbarium.

Ceratium hydnoides A. & S. Hitchin, Herts.

Physarum leucophæum (Fr.). Common.

P. nutans Pers. (*Tilmadoche nutans* Rost.). Luton Hoo, Beds; Hitchin and Caddington, Herts.

P. viride Pers. (*Tilmadoche mutabilis* Rost.). Heath, Stopsley, Luton Hoo, Beds; Kensworth, Herts.

P. compressum A. & S. Luton Hoo; Hitchin (stalked and plasmodiocarp forms from dirty white plasmodium, H. E. S.).

P. calidris List. Very rare. (See *Journ. Bot.* 1891, 258). Pulloxhill, Beds. Fruiting in summer.

Craterium vulgare Ditm. Heath, Stopsley, Pepperstock, Beds.; Hitchin, Herts. Fruiting in summer and autumn.

C. leucocephalum (Pers.) Rost. Pepperstock, Totternhoe, Beds. Fruiting in autumn.

Leocarpus fragilis (Dicks.) Rost. Heath, Ampthill, and Pepperstock Woods. Fruiting in summer and autumn.

Fuligo septica (Link) Gmel. Kitchen End (C. C.), Luton Hoo, Beds.

Badhamia panicea (Fr.) Rost. Luton Hoo; Hitchin. Fruiting in summer.

B. hyalina (Pers.) Berk. Heath, Caddington, Beds. Fruiting in summer and winter.

B. utricularis (Bull.) Berk. (plasmodium full yellow). Heath, Caddington.

B. rubiginosa (Chev.) Rost. Heath. Fruiting in winter.

B. inaurata Curr. (plasmodium pale yellow). Caddington, rare. Fruiting in winter.

Didymium microcarpon (Fr.) Rost. Kitchen End (C.C.). Fruiting in autumn.

D. squamulosum (A. & S.) Fr. Sundon, Luton Hoo, Kitchen End (C.C.), Beds; Hitchin (H.E.S.), Ayers End (A.E.G.), Herts. Fruiting in summer and autumn.

D. farinaceum Schrad. Heath. Fruiting in summer and winter.

D. pertusum Berk. Clophill, Beds. Fruiting in autumn.

Chondrioderma difforme (Pers.) Rost. Heath, Luton; Hitchin. Fruiting in autumn and winter.

C. testaceum (Schrad.) Rost. (first British record). Stopsley, Beds. Fruiting in summer.

C. radiatum (Linn.) Rost. Heath, Pepperstock. Fruiting in winter.

Lepidoderma tigrinum (Schrad.) Rost. Heath. Fruiting in winter.

Stemonites fusca Roth. Heath, Luton Hoo, Sundon, Beds; Kensworth, Herts.

S. ferruginea (Ehrh.). Chalton, Pepperstock, Kitchen End. Fruiting in summer.

Comatrichia typhina (Roth.) Rost. Luton Hoo, Stopsley; Hitchin (H. E. S.). Fruiting in summer and autumn.

C. Friesiana De Bary. Heath, Leagrave, Pepperstock; Ayers End (A. E. G.). Fruiting in summer and autumn.

Lamproderma physaroides (A. & S.) Rost. Heath. Fruiting in winter.

L. irideum (Cke.) Mass. Hitchin.

Enerthenema papillatum (Pers.) Rost. Caddington, Luton Hoo. Fruiting in summer.

Tubulina cylindrica (Bull.) DC. Kitchen End (C. C.). Fruiting in summer.

Enteridium olivaceum (Ehr.). Heath. Fruiting in winter.

Dictydium cernuum (Pers.) Nees. Luton Hoo, Chalton. Fruiting in summer and autumn.

Cribraria aurantiaca Schrad. and *C. argillacea* Pers. (plasmodium slate coloured). Heath, Luton Hoo. Fruiting in spring and summer.

Reticularia lycoperdon Bull. Luton Hoo. Fruiting in summer.

R. Rozeana Rost. (See *Journ. Bot.* 1891, 263). Heath. Fruiting in spring.

Trichia fallax Pers. Heath, Sundon, near Luton, Luton Hoo.

T. fragilis (Sow.) Rost. Heath, Pepperstock; Bricket Wood, Ayers End (A. E. G.), Herts. Fruiting in autumn.

T. scabra Rost. Sewell, Beds. Fruiting in autumn.

T. varia Pers. Heath, near Luton, Leagrave. Fruiting in

autumn. — v. *nigripes*. Wheathampstead, Herts. Fruiting in spring.

T. contorta (Dit.) Rost. Rare. Caddington, Beds. Fruiting in spring.

T. affinis De Bary. Heath, Sundon, near Luton; Wheathampstead, Harpenden, Kensworth, Ayers End (A. E. G.). Fruiting in spring.

T. Jackii Rost. Heath, Pepperstock, near Luton; Bricket and Zouches Woods, Herts. Fruiting in autumn and winter.

Prototrichia flagellifer (B. & Br.) Rost. Heath. Fruiting in winter.

Hemiarcyria rubiformis (Pers.) Rost. Kitchen End (C. C.), Barton Springs, Beds. Fruiting in spring and autumn. — Var. *Neesiana*. Barton Springs. Fruiting in autumn.

H. intorta List. Hitchin.

H. clavata (Pers.) Rost. Wheathampstead. Fruiting in spring.

Arcyria punicea Pers. Common. Fruiting in autumn.

A. cinerea (Bull.) Schum. Luton Hoo, Stopsley. Fruiting in summer.

A. incarnata Pers. Heath, Barton Springs, Caddington, Beds; Kensworth, Herts. Fruiting in autumn.

A. nutans (Bull.) Grev. Caddington, Luton Hoo. Fruiting in summer.

A. ferruginea Sauter. Heath. Fruiting in winter.

Lycogala epidendrum (Buxb.). Luton Hoo, Kitchen End (C. C.), Sharpenoe, Beds. Fruiting in summer.

The following Mycetozoa were observed in the New Forest, Hants, August, 1892:—

Physarum leucophæum Fr.
Stemonitis ferruginea Ehrh. var. *microspora*.
S. splendens var. *confluens*.
Dictydium cernuum (Pers.) Nees.
Arcyria nutans (Bull.) Grev.
Trichia fallax Pers.
Lycogala epidendrum Buxb.

The Hants notes having been made after a long period of dry weather, will account for the fewness of the species. The list would doubtless be largely extended if a visit to the same locality were made in the autumn or winter. The most noteworthy record is that of *Stemonitis splendens*, on which see note by Mr. A. Lister in *Journ. Bot.* 1891, 262.

TWO NEW BRITISH RUBI.

By the Rev. Augustin Ley, M.A..

Rubus acutifrons, n. sp. — *References:* Botanical Exchange Club Reports, 1890, p. 294; 1891. pp. 331, 352; sub nomine *R. Lintoni* Focke.—Stem, when growing in open woods, forming a low

arch, angular throughout, striate, reddish or brownish green in exposure; not pruinose, slightly hairy, with few or many stalked glands, and many short, tubercular-based acicles. Prickles many, the larger nearly equal, mostly but not always confined to the angles, deflexed, from long compressed dilated bases. Leaves flat, quinate-pedate, occasionally ternate, opaque, thin, nearly naked above, green and thinly hairy, not felted beneath. Leaflets not imbricate, the basal oval, intermediate obovate-acuminate, terminal broadly elliptic or subrotund, often irregularly but deeply incise-lobate in the upper half, with long acuminate point. Ordinary serrations rather shallow, nearly simple, with acute forward-pointing teeth. Petioles with many slender acicles and stalked glands, few slender declining prickles, and short hair. Stipules short, linear, fringed with stalked glands. Panicle long, compound, very lax but with the flowers remarkably aggregated; lower branches racemose-corymbose, intermediate cymose or pseudo-umbellate; corymbose above. Rachis wavy, with many slender deflexed prickles, stalked glands and patent hairs, especially in the upper part; slightly felted, but not grey with felt. Sepals ovate cuspidate-acuminate, clothed and coloured like the rachis, dark, with pale margins, strongly ascending after the petals fall. Petals rather small, obovate, pinkish; stamens white, exceeding the green styles. Fruit well formed, round, acid.

Habitat.—Woods. Not noticed in hedges, or in the open country. *Localities*—Rigg's Wood, Sellack; Coldborough Park Wood, Yatton; Haugh Wood, Mordiford; Belmont Woods, Hereford. All these localities are in Herefordshire, and lie within a radius of ten or twelve miles; the plant is abundant, and retains its characters well in each of them. I have had it under observation now for five seasons.

From the above description it will be seen that this plant approaches *R. Lintoni* Focke, especially in the shape of the leaves, and the glandular clothing of the rachis. I considered it to be *R. Lintoni* when I first found it; and a reference to the Exchange Club Reports will show that Prof. Babington partly concurred in this opinion. The resemblance, however, is mainly superficial, and the essential differences, especially in the glandular clothing of the stem, the quinate leaves, and the uniformly much more largely developed panicle, justify the adoption of a new name.

A series of this plant, submitted to Dr. Focke in the autumn of 1892, elicited from him the following remarks, which he has kindly allowed me to make public:—

"The *Rubus* sent agrees very well indeed with a plant I have known for twenty-five years. Besides the difference of colour in the petals, I see not the least appreciable difference. I think, therefore, that I know the plant, but I know no name . . . In my *Synopsis Rub. Germ.*, published in 1877, I mentioned it (p. 361) under *R. Beteken*; but as that is a very local and little known form, which has not been identified with any more constant species, it will not be advisable to make use of this name."

The Rev. W. M. Rogers suggests an affinity in our plant to *R. viridis* Kalt.; and in this suggestion Dr. Focke concurs.

Rubus ochrodermis, n. sp.—*References:* Botanical Exchange Club Reports, 1889, pp. 257, 258; 1890, p. 294; 1891, p. 330.—Stem extensively creeping when unsupported, thick at the base, often branching, ochreous, becoming dark brown-red in exposure, bluntly angular, striate, hairless or nearly so. Prickles many, unequal, not confined to the angles, the largest ¼ inch long, declining, slightly deflexed towards the end of the stem, from rather broad bases, rather blunt, soon losing their points, and appearing on the old stems as pointless tubercles; passing into unequal, mostly eglandular acicles and minute bristles; all these organs being of an ochreous yellow. Leaves nearly always ternate, very rarely quinate-pedate; lateral leaflets roundly obovate-mucronate, gibbous below, and occasionally lobed, their petiolules very short, nearly patent, or rarely even divaricate; terminal rather long-petioled, roundly obovate-mucronate. All the leaflets nearly equal in size, flat, green on both sides, veins prominent below. Upper surface with a few scattered hairs; under with thin, harsh, curling hair; serration nearly simple, irregular, the larger teeth inclining backwards. Petioles bearing deflexed slender prickles, mixed with a few acicles, stalked glands and hairs. Stipules short, linear-lanceolate, fringed with hair and stalked glands. Panicle elongate, racemose or subracemose above, with more or less ascending peduncles in the ultra-axillary part, and long ascending racemose branches below. Leaves ternate or single, much like those of the stem but more coarsely serrate. Rachis and peduncles slender, felted, with short hairs, crowded stalked glands mostly no longer than the hairs, and very slender aciculate prickles and unequal acicles, which are nearly patent above, but lower down become strongly declining as well as stouter, and occasionally even deflexed. Sepals reflexed in flower and fruit, ovate, shortly pointed, green externally, bearing a few acicles and plentiful stalked glands, conspicuously grey-felted internally. Petals white or pinkish, narrow, small. Stamens white, at length red-based, longer than the greenish white styles.

Habitat.—Woods; not observed in hedges or in the open country.

Localities.—Woods near Dinmore station; Haugh Wood, Mordiford; Wareham Wood, near Hereford. These stations all lie in Herefordshire, and within a radius of ten miles. Wood border at Llowes, Radnorshire. This station lies some eighteen miles to the west of the Herefordshire stations. In foliage and inflorescence bearing some resemblance to *R. mucronatus* Blox., but distinct and pecul ar in the armature of its stem, in which it comes nearest to *R. scabrosus* Müll. I have not noticed this armature to be subject to any variation. Queried by Dr. Focke in 1885 (*in lit.*), "*mucronatus* Blox., I think"; but upon insufficient and too advanced specimens. Upon a series of specimens submitted to him in the autumn of 1892, he notes, "A remarkable form, unknown to me."

Other opinions upon our plant can be seen at the places referred to above; but after watching it in the growing state for seven or eight seasons, I can say with some confidence that it cannot without violence be brought under any of the plants whose names have been as yet suggested for it.

I wish, in conclusion, to acknowledge the great assistance which I have received from the Rev. W. Moyle Rogers in drawing up the above descriptions.

FURTHER NOTES ON HIERACIA NEW TO BRITAIN.

By Frederick J. Hanbury, F.L.S.

(Concluded from vol. xxx., p. 370.)

H. anglicum Fr. × hypochæroides Gibs. — Occurs over a very small area of rocks on two of the limestone scars in the neighbourhood of Settle; the areas are so limited that it would be imprudent to publish their exact position. I first received dried specimens from the Misses Thompson, who have thoroughly worked up the *Hieracium* flora of the district, with the request that I would name them. The examples sent were so different to anything I had seen before, that I took the earliest opportunity of investigating the locality in their company, and studying the plant amid its natural surroundings. Exactly intermediate in nearly every character between the supposed parents, typical plants of which grew all about the rocks, we felt no doubt that we had found a hybrid, and its restricted distribution strongly favoured this view, in which both the Rev. E. S. Marshall and Mr. J. C. Melvill fully concur. Of more robust habit and with larger heads than *hypochæroides*, it strongly resembles that species in its pure yellow styles, floccose-margined and comparatively short blunt phyllaries, its straight bifurcate manner of branching red stem, and beautifully spotted leaves, which are purpled beneath, whilst their ovate subacute shape and shaggy petioles are just those of the *anglicum* type. There is one rather large and broadly clasping stem-leaf, the heads are very truncate at the base, and the ligules slightly pilose before expansion.

H. commutatum Beck. × Eupatorium Griseb. (?). — I have not personally seen the above in the fresh state, but, judging from the fine series of specimens recently given me by the Rev. Augustin Ley, have little doubt but that this determination will prove to be correct. Here are Mr. Ley's own notes:—"An interesting form of *Hieracium* grew on a hedgebank near Forfantan Station, Breconshire, at about 1000 ft. above sea-level." Typical *H. boreale* was growing in abundance along with it, and *H. corymbosum*, also in abundance within a few hundred yards. Our plant occupied some twenty yards of the hedgebanks, and there were many hundred specimens. It appeared distinct from both, yet its close alliance with both, especially with *H. boreale*, seemed unmistakable. From *boreale* it differed in the more rigid leaves, broader in their centre, and tapering gradually at both ends, the point of the leaf acute, the sides with finely pointed spine-like serrations, venation much marked on the under side, and slightly in the stem, which was less hairy. From *corymbosum*, in the darker colouring of the whole plant, in the stiff whitish hairs of the stem,

and the dark green involucre; the branches of the panicle less spreading; the height of the plant was about 2–3 ft., while that of *H. corymbosum* was 1–2 ft. From the above it will be seen that the plant was fairly intermediate between *H. boreale* and *H. corymbosum*, bearing the stem, inflorescence and involucre of the former, and leaves approaching the latter. It is suggested that it is a hybrid between the two."

To the above remarks I would only add that there is no question whatever as to its connection with *H. commutatum* Beck. (*H. boreale*), whilst the absence of crowding in the leaves, their harsher texture, prominent veining, and the less broadly heart-shaped character of those in the upper portion appear to me very distinctive. The phyllaries, too, are rather longer and more acute, and, as far as I can judge from dried specimens, the styles are less livid, and the ligules of a deeper yellow than in *H. commutatum*. I am only sorry that Mr. Ley did not dry good specimens of the two supposed parents, but this he can probably do another season; the extraordinary range of variation in both species renders the acquisition of this additional evidence most desirable.

I will conlcude this paper with brief references to several well-marked plants which require further investigation before it would be wise to give new names, distinguishing them by letters only. They are worthy of the closest attention, and to most, I cannot doubt, it will ultimately be found necessary to give specific or varietal rank. For some I had already provided names, intending to publish them among the foregoing. The prolonged frost of last winter, however, destroyed many of my most recently collected plants. Hieracia as a rule are hardy enough, but being recently moved and not having developed sufficiently long rootlets they were lifted out of the ground and killed, thus stopping for the present all further opportunity of studying their habits and of comparing with other species grown under similar conditions. As they were collected from widely separated districts, I must rely on the kindness of correspondents to replace some of my lost forms.

a. I am indebted to the Rev. H. E. Fox for the only specimens I possess of a plant, sent in August, 1890, from Dollywaggon Pikes, Cumberland. The notes I made on receiving the fresh specimens are insufficient to enable me to give a full description at present, but the following characters will serve to distinguish it pending further particulars. Stem from 15 to 20 inches high, both radical and cauline leaves rather *anglicum*-like, though the latter are stalked; but differing entirely from that species in the inflorescence. The heads, 3 to 7 or more in number, are borne on slender, arcuate, densely setose and sparingly floccose peduncles, the involucre is almost black with setæ, the phyllaries long and very acute. The ligules are quite glabrous. In the stronger plants the radical leaves are coarsely and acutely toothed at the base, like those of the variety *acutifolium* of *H. anglicum* Fr. The main stem, whilst appearing glabrous, or nearly so, to the naked eye, is scabrid with minute rough bristles and setæ, and sparingly floccose.

b. A very interesting plant, found by Mr. H. C. Hart and myself in July, 1891, on the grassy banks of the Carrick River, Co. Donegal, scarcely above sea level. It appears to be intermediate in general character between the *scapigera* and *vulgata*. Height about 15 to 20 inches, heads 1 to 3, rather large, radical leaves few, broadly-ovate, subacute, very wide towards the truncate base, and abruptly narrowed to a long petiole, almost entire. Stem leaves usually two, shortly stalked, of the same form and equally abruptly narrowed as in the case of the radical leaves. All bright green and glabrous above, rather glaucous and with few long simple hairs below. Styles pure yellow. Ligules glabrous. Involucre truncate. I have seen no other form at all like this, and had hoped to have watched its development under cultivation and completed its description, but the destruction of my roots necessitates the postponement for the present of further information.

c. A plant belonging to the *vulgata* discovered in July, 1888, by Dr. F. Buchanan White on trap rocks at St. Cyrus, Kincardine. It is about twenty inches in height, and in foliage resembles *H. vulgatum* Fr. The heads, however, are so extraordinarily cuneate at the base, and the phyllaries so abnormally long, narrow and very acute, overtopping the young buds to the extent of making them appear nearly double their true length, that it is very doubtful if it can be placed to that species at all. Dr. White made no further description than that the styles were yellow, and he has not yet had the opportunity of revisiting the spot. I sent it to Dr. Lindeberg, who wrote:—"Forma sane miraculosa, ab omnibus Hieraciis luculenter diversa phyllariis longissimis, formâ anthelæ foliisque caulinis basi incisis, etc. Observatione maxime dignum!"

d. A plant found by Dr. White at Loch Lubnaig, Perthshire, on the 27th August, 1891. Excepting that the involucres are very sparingly floccose, it agrees well with *H. truncatum* Lindeb. As the stems were broken off from near the base, it is impossible to say from our present specimens whether the root-leaves have the semi-persistent character of those of *H. truncatum* or not. The plant should be carefully collected again.

e. A beautiful and distinctive form, occurring on the precipitous cliffs of Craig Dulyn, Carnarvon. I had fully intended to have described this plant under the name of *H. orimeles*, but have recently come to realize that it is closely allied to, if not identical with, the Braemar form alluded to in the earlier part of this paper under *H. onosmoides*. In North Wales the plant grows luxuriantly and seems at home, the flowers in most cases being perfectly developed, though a few of the stylose form occur, and these first aroused my suspicion as to its connection with the Scotch specimens. The further discovery that some of Mr. Beeby's Shetland plants from rocks at the foot of Cliva Hill, near Brae, are certainly similar to those from Wales, greatly strengthens the supposition that there is one form occurring over a large portion of Great Britain. I am equally clear now that this must be separated from the Tain plant, and, should further investigation prove it to belong

to *H. buglossoides* Arvet-Touvet, I shall gladly adopt this name; but if not, the name suggested above would be suitable.

Since the publication of the name *H. cuniceps* in the last (December) number of this Journal, I find that Norrlin has forestalled me in the use of this term. I therefore suggest *Hieracium rivale* as a suitable substitute, having nearly always found the species by small rocky streams. I may here mention, as a coincidence, that Norrlin described a *Hieracium* under the name *Hieracium proximum*, a few weeks after my description of that species had appeared. I have also to thank a correspondent for pointing out a material correction needed in my description of *H. euprepes*. I there spoke of the peduncles as "divaricate." They are remarkably upright, and form a very acute angle with the axis in the Scotch specimens, but in some of the robust and dwarf Welsh plants, a drawing of one of which I had before me when writing, they are widely spreading. The close upright panicle, however, is the more usual form.

This brings me to the end of a paper, the volume of which has considerably exceeded my first intentions. To many who have not made this genus a special study, the number of new forms described may seem excessive. If, however, the careful work Mr. Backhouse accomplished single-handed in a few years, and over very restricted areas of the British Islands, be compared with similar work done by a large number of our best critical botanists over much wider areas and during quite as many years, it will not appear surprising that a large number of new forms have been found. As stated early in this paper, I have endeavoured to restrict the number as far as I honestly can, and I need scarcely say that even with this large accession of new names, I have many individual specimens for which it is still difficult to find a resting-place. This will always be the case in a genus where finality is an impossibility. It must not be inferred, however, from such an admission, that there do not exist well-defined types, often scattered over wide geographical areas separated from each other by hundreds of miles of lowland country, yet constant in their characters and recognizable at a glance wherever they are met with. The experience of all true workers at a genus like *Hieracium* proves such an inference to be quite untenable. Our experience in this country differs in no respect from that of our *confrères* abroad, who have made this and other large critical genera a lifelong study.

I would only add, in conclusion, that I hope shortly to be able to send to the Botanical Department of the Natural History Museum at South Kensington a fairly complete set of our *Hieracia*, embracing nearly all the forms described in this and previous papers. It has been impossible to comply with the numerous requests for specimens that I have received. For the work that lies before me in the completion of my monograph, it is essential that I should retain as large and representative series as possible. To the list of kind friends enumerated at the beginning of this paper, I wish to add the name of Dr. W. A. Shoolbred, and to again thank all for their continued help during the past season.

SHORT NOTES.

Do Natural Hybrids exist ?—I had overlooked the fact of Mr. C. B. Clarke's having again referred to the hybrid question in the *Journal* for last November (p. 322), in his paper on *Holoschœnus* Link. His first objection I deny; experimental proof *has* been furnished, in many cases. His second objection carries very much more weight; but the question of what a subspecies is (supposing "subspecies" to be more than an expression) complicates that part of the subject, and one hardly knows what one has to meet. I should not, for example, describe as a hybrid the offspring of a species and of a variety of that species. As bearing on this matter, I may perhaps be allowed to mention a striking object-lesson. While the Rev. E. F. Linton was staying with me last August, we found growing upon a railway-bank near Witley, Surrey, several plants intermediate between *Verbascum nigrum* and *V. Thapsus;* these two species occurring at the same spot. Now, I had carefully searched this same locality in vain for such intermediates in 1890, and am certain that they did not then exist. He would be a bold man who should make out the two supposed parents to be "subspecies" of one aggregate; and I do not think that any unprejudiced person could doubt that the intermediate was the product of fertilisation between them. Why not, then, call them (what in point of fact they are) hybrids ? Similarly, I had allowed *Epilobium lanceolatum* and *E. roseum* (besides various other species) to spread rather freely in my garden. This summer there appeared for the first time two or three specimens which blended their characters. These I cannot regard as anything else than *E. lanceolatum* × *roseum;* there is no other reasonable way of accounting for the phenomena. Had I found the plants in a wild condition, the evidence would doubtless have been less satisfactory; but I should have felt justified, by a somewhat intimate acquaintance with the two species, in naming them as above. I may add that the true species always retain their individuality, and can, when once known, be distinguished at a glance.—Edward S. Marshall.

Salix Moorei, *Lond. Cat.*, in Forfarshire.—In connection with Messrs. Linton's paper on Scottish willows (*Journ. Bot.* 1892, 358), I may mention that a small plant which I collected in Glen Fiagh, in 1888, has proved to be the above (*S. herbacea* × *nigricans*). It bears a considerable resemblance to *S. Grahami*, which is planted close to it, but shows just those differences which one would expect from the substitution of *S. nigricans* for *S. phylicifolia* in the parentage.—Edward S. Marshall.

Carex rhynchophysa in Ireland.—Mr. R. Lloyd Praeger has been fortunate enough to add this well-marked species to our Flora; he found it last August in County Armagh. A description and plate will appear in our next number.

Asplenium lanceolatum in Kerry. — I came across a fair maount of this fern last summer, not far from the village of Camp,

Tralee Bay, the locality being about a mile from the sea. This is most probably an addition to the Flora of Kerry; for though the fern is recorded in the Supplement to the *Cybele Hibernica* as growing on two old castles near Cahirciveen, a search on one of these castles last summer failed to discover the plant, while Mr. A. G. More tells me he has seen no previous Kerry specimens. It grew intermingled with *A. Adiantum-nigrum*. *A. lanceolatum* seems unaccountably rare in Ireland, its only other recorded locality being about Kinsale, Co. Cork.—R. W. Scully.

Surrey Plants.—In some "Additional Notes on S. W. Surrey Rubi," published in the *Journal* (1891, p. 341), *R. Drejeri* Jens. is recorded on the authority of the Rev. W. Moyle Rogers. This was at a time when little was known of *Drejeri* in this country, and a good description was not available. Mr. Rogers has since informed me that the plant in question must certainly go to *R. fuscus* W. & N. Readers are requested to make this correction in their copies of the *Journal*.—James W. White.

Shropshire Rubi.—Little has been done at the brambles of this county since Leighton worked at them; consequently, with the advance made since his day in the knowledge of the genus, there is room for making some improvement on the list in his Flora. In a single wood, called Vales Wood, near Ruyton XI Towns, I found over a dozen different Rubi, including *R. opacus* Focke, growing very fine from 3–7 ft. high; *R. erythrinus*, Genev., *R. pyramidalis* Kalt., *R. Hystrix* Weihe, *R. Newbouldii* Bab. (fide Rev. W. Moyle Rogers), and *R. pulcherrimus* Neum., all new to the county. This wood is on the slope of a red sandstone hill called The Cliff. In the same wood was a small amount of *R. carpinifolius* W. & N., which I mention because *R. carpinifolius* Blox. has been often mistaken for Weihe and Nees' plant; and I understand that Leighton was in frequent communication with Bloxam over Rubi, when preparing the county Flora. For a similar reason I may state that I found *R. villicaulis* Koehl., near Crosemere; the plant so named in the Flora having probably been *R. pyramidalis* Kalt. The Mere district does not seem to be at all rich in brambles, except in one spot, a sandy piece of waste land between Crosemere and Sweatmere, where besides *R. villicaulis*, *R. plicatus*, *R. fissus*, and some others flourished, including a plant allied to *R. anglosaxonicus* Gelert, for which I have no name.—Edward F. Linton.

The supposed Asplenium acutum from the Mourne Mountains.—The recent paper on the botany of these mountains referred to at p. 31, contains the following interesting note:—"*Asplenium Adiantum-nigrum* var. *γ. acutum* Bory.—In a dark cave among the mountains of Mourne (Sherard, *Herb. Oxon.*; also *Raii Synopsis* (*Filix minor longifolia*, &c.). We are glad to be able to correct an error of long standing in regard to this fern. The plant which was collected by Sherard in the Mourne Mountains in 1694, and of which fronds are preserved in the Herbarium Sloaneanum in the British Museum, and the Sherardian herbarium at Oxford, was not an *Asplenium*, but a beautifully-divided plumose barren form

of *Athyrium Filix-fœmina*, closely resembling the form known to pteridologists as *Kalothrix*. The frond in Herb. Sloaneanum (vol. 100, p. 52) [sent by Sherard] is figured in Plukenet's *Phytographia* (p. [t.] 282, fig. 3), and described by Petiver in his *Almagestum* (p. 250), the locality of West Indies, which is given on the page mentioned, being corrected in the *Mantissa* (p. 78, para. 4) to 'ex Hibernia.' Ray (*Historia Plantarum*, vol. iii., p. 79, 1704) gives the mountains of Mourne, in Co. Down, as the place where the specimen above mentioned was obtained, Plukenet's figure and description being quoted. In the third edition of Ray's *Synopsis* (1724) the editor, Dillenius, suggests (p. 127) that the fern may be a cave-grown form of *Asplenium Adiantum-nigrum*. This view is endorsed by Newman, who says (*British Ferns*, ed. 1844, p. 259): 'Sprengel, Willdenow and Sadler, all of them give an *Asplenium acutum*, which I think must be identical with Ray's *Filix minor longifolia*.' With regard to the specimen in the Sherardian herbarium at Oxford, Mr. G. C. Druce kindly informs us that it is labelled, 'gathered in ye mountains of Mourne in ye county of Down.' On this label (?in Ray's handwriting) is written: 'This is a very rare and elegant plant and deserves a proper name.' Accompanying it is a nature-printed sheet from the same specimens, and probably of nearly contemporaneous date. Sibthorp, when professor at Oxford (1784–1795), labelled this specimen *Asplenium Adiantum-nigrum* L. The British Museum specimen, which R. Ll. P. [Mr. Praeger] has examined, is practically identical with the *Kalothrix* form of *Athyrium Filix-fœmina*, and with the Oxford specimen. Professor Vines writes us: 'I have compared the enclosed (a cultivated frond of *Kalothrix*) with the Sherardian specimen from the Mourne Mountains, and have no hesitation in saying that they are identical, excepting the differences that are to be referred to the fact that one plant is wild and the other cultivated. The Sherardian specimen is certainly '*Kalothrix*,' i. e., a barren plumose form of *Athyrium Filix-fœmina*.'"

Hieracium Sommerfeltii Lindeb., var. tactum (*Journ. Bot.* 1892, 367).—This form should, in my opinion, be treated as a separate species. My cultivated specimens remain practically indistinguishable from the wild ones, but differ very materially from Perthshire *H. Sommerfeltii*, grown side by side with them, and from Lindeberg's types. When the hawkweeds of the granitic hills of Scotland have been thoroughly examined (which is at present very far from being the case), I have little doubt that this plant will be found in various parts of the country.—Edward S. Marshall.

Lagurus ovatus in Jersey (*Journ. Bot.* 1892, 377). — I notice that *Lagurus ovatus* is recorded as an addition to the Jersey Flora. I found it in the same locality in 1877, and recorded it in *Science Gossip*. Subsequently I found that it owed its origin to the misplaced zeal of a botanist who scattered seed of this pretty Guernsey grass on the sands near St. Ouen's bay. There was a good patch of it when I saw it, which was, I believe, the year after the seed had been sown.—G. Claridge Druce.

New Wilts Plants.—The following additions to the Flora of Wilts have been verified. I am responsible for the localities against which no name is placed:—

New for the County.—*Geranium collinum*, established at 2, near Devizes, *Rev. A. C. Smith*. *Rubus adscitus*, 11, East Knoyle; *Pyrus communis*, 5, Grimstead; 11, East Knoyle. *Senecio aquaticus* b. *pinnatifidus*, 5, Clarendon. *Carduus crispus* var. *litigiosus*, 10, Whaddon. *Campanula rapunculoides* established at 8, Codford, for upwards of twenty years; origin unknown; *F. O. Earney*. *Calluna Erica* a. *glabrata*, 5, Grimstead, *Earney*; b. *incana*, 5, Grimstead, *Earney*. *Gentiana Pneumonanthe*, 6, Pitton, *Miss Henderson*. *G. germanica*, 11, Mere Down, *Rev. E. H. Linton*. *Mentha sativa* a. *rivalis*, 2, S. Wraxall, *G. C. Druce*; 8, Heytesbury. b. *paludosa*, 5, Grimstead. *M. gentilis*, 5, Landford. *Melissa officinalis* established at 5, Whiteparish. *Salix Smithiana*, 2, Clyffe Pypard. *Rev. E. H. Goddard*; 5, Grimstead; 7, Durnford; 10, Broad Chalke; 11, E. Knowle. *Epipactis media*, 5, Grimstead, *Henderson*. *Juncus compressus*, 8, Codford, *Earney*. *Agropyron repens* b. *barbata*, 4, Ham and Chilton Foliat, *Druce*. *Pilularia globulifera*, 5, Hamptworth.

New for Wilts, North.—*Fumaria densiflora*, 4, near Chilton Foliat, *Druce*. *Myosotis repens*, 4, Chilton Foliat, *Druce*. *M. arvensis* b. *umbrosa*, 2, Bishopstone, *Druce*.

New for Wilts, South.—*Nasturtium sylvestre*, 10, Britford, *Earney*. *Medicago denticulata*, 5, Farley, *Henderson* (in confirmation of *Top. Bot.*). *Vicia Bobartii*, 10, Alderbury. *Rosa sphærica*, 6, Clarendon; 9, Semley, *Rev. W. M. Rogers*. *Bartsia Odontites* a. *verna*, 6, Milford; 7, Stratford. b. *serotina*, 5, Grimstead; 6, Ford; 7, Durnford; 10, Bishopstone; 11, E. Knoyle. *Betula pubescens*, 5, Grimstead; Whiteparish. *Scirpus fluitans*, 5, Hamptworth. I am specially indebted to Mr. J. G. Baker, Mr. Arthur Bennett, and the Rev. W. Moyle Rogers, for critical help in naming.—Edward J. Tatum.

Rosa involuta Sm., in Somerset.—In June last I fortunately found two bushes of this rose, which I had never gathered before, in a field-hedge not far from Dulverton. It is believed that the plant had not been previously observed in the county of Somerset, although recorded in *Topographical Botany* for both divisions of Devonshire.—James W. White.

SEEDLINGS.

A Contribution to our Knowledge of Seedlings. By the Right Hon. Sir John Lubbock, Bart., M.P., &c. London: 1892. Kegan Paul, Trench, Trübner & Co. 8vo, Vol. I., pp. viii, 608; Vol. II., pp. 646. With 684 figures in the text. Price £1 16s.

We have our "Genera Plantarum," our Prodromi, and many monographs besides, but these deal only with the plant that has reached maturity. There are also divers works and papers more or

less devoted to the subject of germination and seedlings, or which include descriptions of individual cases or mention some particular phase of the subject; but hitherto we have had no general systematic account of the early stages in the life of flowering plants. Such, however, is Sir John Lubbock's recently published book on seedlings. Following an introduction of about 80 pages are nearly 1200 containing descriptions of the seedlings, and often also of the seeds and germination of species from almost every natural Order included in Bentham and Hooker's great work, the arrangement of which the author has adopted. A copious bibliography occupies 40 pages, and to complete the whole is a full index of all the species referred to in the text.

To botanists who frequent the Linnean Society or read its *Journal*, the introduction will already be familiar. It consists in fact of several of the author's papers already published by the Society, now revised and arranged in one chapter, and a very interesting one it makes. In it Sir John discusses at some length the form and size of cotyledons and attempts to explain their great variety by corresponding variations in the shape of the seed, or difficulties in the way of escape during germination.

Some may question the value of these explanations, at any rate as regards the general principle that the form of the cotyledon is determined by the form of the seed and its arrangement or position therein, but the fact remains that there is a striking difference between the cotyledons and not only the adult leaves of the plant, but in many cases also those immediately following the seed-leaves, and so extended a series of observations bearing on the subject cannot but be welcome. The forms of cotyledons are, as Klebs observes, and as anyone may see by glancing through the present work, on the whole much simpler than those of the later leaves, and Klebs suggests that while in some cases perhaps they retain the form characteristic of the species in bygone ages, a more generally applicable explanation is that applied by Goebel to stipules, namely, that they are "simplified by arrest." When, however, we consider the multifarious duties of the cotyledon, sometimes serving merely as a storehouse of food-material for the growing seedling, sometimes as an organ for bringing into solution and absorbing the highly condensed and often comparatively insoluble food-stuff of the endosperm and carrying over the same to the seedling stem, and then often, even after performing these functions, actively making its way out of the seed and playing quite a different part as a chlorophyll-containing assimilatory leaf, and in exceptional cases like *Streptocarpus*, *Cyclamen*, and many of the Onagrarieæ, assuming the size, form and importance of an ordinary foliage-leaf—when we take all this into consideration, we must surely admit that the cotyledon is something more than a relic of bygone ages, and represents a highly complicated rather than a "structure simplified by arrest," and can hardly be regarded merely as "a survival of the universal foliage of deciduous trees in older geological days, ere time had differentiated them into their present varied forms." Sir John does at any rate show evidence that in certain cases certain

causes and effects are co-related; that, for instance, an emarginate or lobed cotyledon is often coincident with a smaller or greater ingrowth at the chalaza; that narrow cotyledons are often present, where for some reason there is not an easy exit from the seed; and that if they had broadened out in the ample space afforded them in the endosperm, they would probably have never got free, but been torn from the axis, as does actually happen in a species of *Anona* figured on p. 104. Even supposing that many of the theories were not wonderfully suggestive, and that every explanation were untenable, we should still have about a thousand pages chock-full of condensed descriptions drawn up from actual observation of the seeds, germination and early stages of growth of plants of almost every Order obtainable, accompanied in many cases by careful drawings of living specimens.

We can only refer briefly to a few of the points of interest in which the book abounds. Preceding the description of species of each family is an introductory chapter, in which are described the forms of fruit, seed and embryo occurring therein, and also of the cotyledons observed among the seedlings. Where possible, both seeds and seedlings are classified under the prevalent types, the shape of the cotyledons usually forming the basis. This classification, as Sir John himself admits, does not always follow generally acknowledged lines of affinity. Species of the same genus turn up in different groups, while one group will contain species widely scattered through the Order, as, for instance, the broad and entire type of cotyledon of the Cruciferæ, to which the following conform, representing three of the five series, or seven of the ten tribes into which Bentham and Hooker divide the Order:—*Mathiola incana*, *Cheiranthus Cheiri*, *Alyssum maritimum*, *Hesperis nivea*, *Conringia perfoliata*, *Camelina sativa*, *Biscutella didyma*, *Lepidium graminifolium* and *spinosum*, *Iberis corifolia* and *Chorispora tenella*; and with slight modification, *Æthionema gracile* and *Iberis Lagascana*; the second type with broad and emarginate cotyledons is "almost as widely distributed throughout the Order."

Fundamental differences sometimes occur, even between species of a genus. Thus there is a striking contrast between cotyledons of a hypogæal and epigæal nature: in the former they are fleshy, colourless, and fill the seed in which they remain, serving merely as a store of food for the developing seedling, while in the latter they escape from the seed-coats, often grow considerably, become green, and look and behave like an ordinary leaf. *Clematis recta*, however, is described as an exception, not only in its genus but in the whole family of Ranunculaceæ, in that its cotyledons are subterranean and never leave the seed. In Anacardiaceæ there are two leading types: seedlings with aerial and seedlings with subterranean cotyledons; *Rhus Thunbergiana* is a good example of the latter, and *Rhus typhina* of the former. The same is noticed among the Phaseoleæ, where the genera *Phaseolus* and *Erythrina* both supply species illustrative of each class; but here the aerial cotyledons are not strictly foliaceous, remaining pale and fleshy and often turned to one side of the stem. The horse-chestnut is in-

teresting in this respect. As a rule, when the cotyledons remain in the seed, the hypocotyl is undeveloped and the seed remains on or beneath the soil; moreover, the first few leaves are reduced to scales, and it is not until the stem has reached a fair height that spreading foliage-leaves are produced. In the horse-chestnut, however, the hypocotyl grows considerably, carrying up the seeds from which the fleshy cotyledons do not escape, while the first pair of leaves are digitately five-foliolate, though it is hard to say whether, as Sir John suggests, the growth of the hypocotyl is necessitated by the high development of the first leaves, or whether the high development results from the elevated position in the light and air.

Many other peculiarities in germination are figured or described. A sketch of *Medicago orbicularis* shows nine seedlings emerging from a single twisted indehiscent pod, and twelve to sixteen seedlings from one fruit are not infrequent; the competition must be equally severe in *Tetragonia*, where the fruit also fails to burst, and the seedlings have severally to make their exit through thin places at its apex. In *Hedysarum* also the seeds remain in the segments of the fruit till germination, when the radicle pierces the lower valve, while the upper is raised by growth of the hypocotyl and cotyledons. In the Brazil nut (*Bertholletia excelsa*) and the nearly allied *Lecythis Zabucajo*, there is some doubt as to the nature of the fleshy undivided mass which fills the large seed; from a comparison with other genera its homology with the hypocotyl is inferred, the plumule being borne at one end and the radicle at the other; the germination is also peculiar in that the plumule and radicle emerge respectively from opposite ends of the seed. In Valerianeæ and Dipsaceæ, where the solitary seed never leaves the fruit, the latter is pinned to the soil during germination by growth of the radicle through the epigynous involucel; a further purchase is often procured by a swelling in the hypocotyl (*cf.* fig. 1), which, however, in *Scabiosa caucasica*, seems to have lost its function, as it also penetrates the membranous involucel. The peg which keeps the fruit beneath the soil in *Scabiosa australis* vividly recalls that described by M. Flahault in several Cucurbitaceæ, and figured by Darwin in the *Movements of Plants* (p. 102,

Fig. 1.
Scabiosa atropurpurea. Germination. × 3.

fig. 62). *Dipsacus ferox* has a very similar fruit, but no hypocotyledonary peg ; and it was found that 98 to 100 per cent. of the seedlings carry up the fruit in germination (fig 2).

A subject full of interest is the growth of the cotyledons after emerging from the seed. Often they remain small and insignificant and soon perish ; in other cases they may grow considerably, as for instance in Crucifers like the radish or cabbage, but still retain more or less of their original shape, and show not the slightest relation to the form or appearance of the later leaves. In some Cucurbitaceæ and a number of Cruciferæ, the cotyledons, though entire in the seed, become subsequently emarginate ; this is apparently sometimes due to a group of water stomata at the apex, which causes there a retardation of growth compared with that of the base and sides. This is the case in *Sisymbrium officinale* and also in *Galium Aparine* (fig. 3) and *G. saccharatum*.

FIG. 2.
Dipsacus ferox.
Germination. ×3.

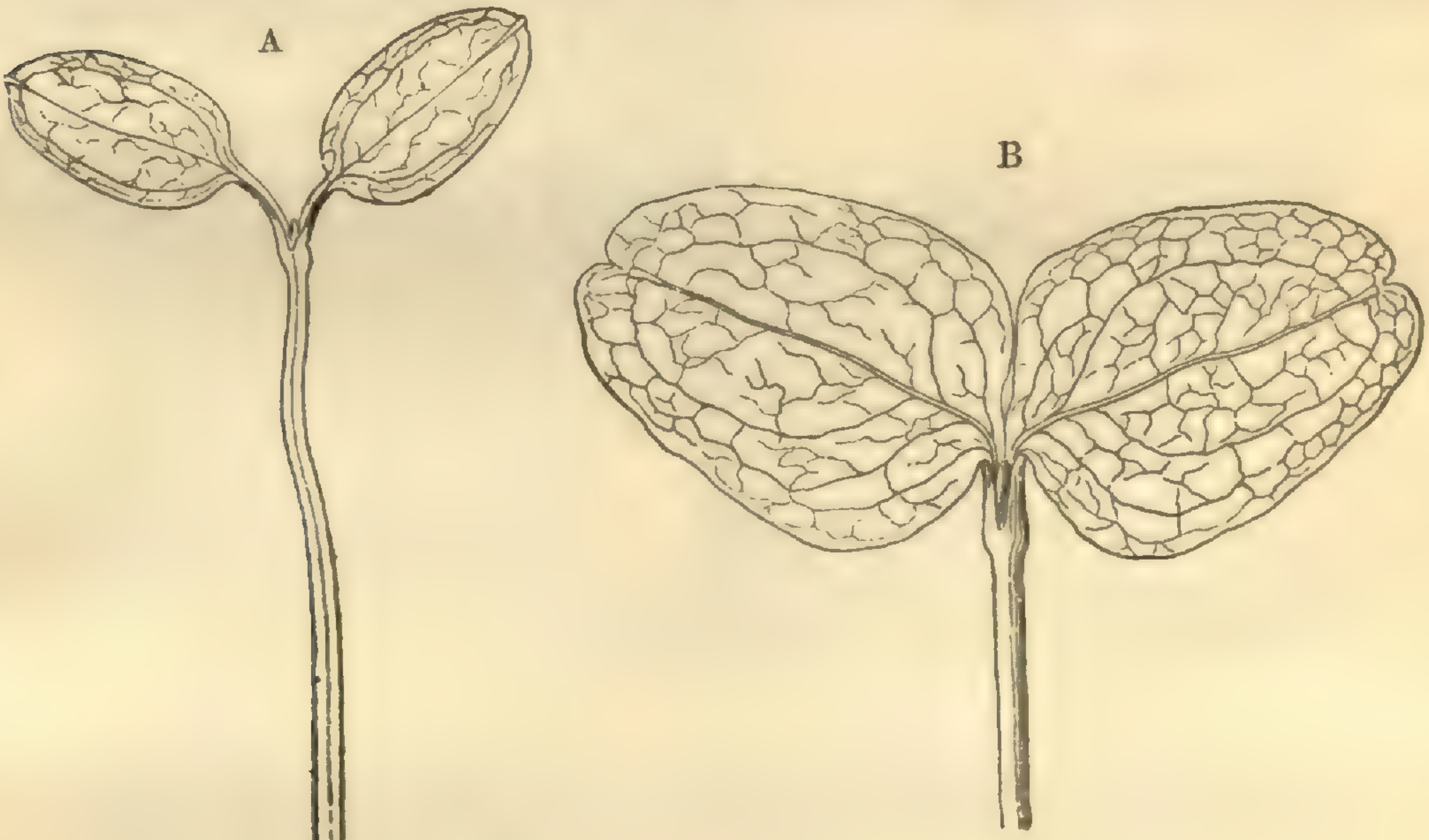

FIG. 3.
Galium Aparine. A, young seedling. B, a few days older. ×2.

Very rare are cases like *Gunnera chilensis* and *Loasa*, where the cotyledons, though totally different in form, possess in the one case the pubescence and ciliation, in the other the stinging hairs so characteristic of the leaves ; the stellate scales of *Eleagnus* and *Hippophaë* appear directly above the cotyledons, and in *Eleagnus angustifolia* invade their petioles. In Sarraceniaceæ the cotyledons

after germination increase greatly in length in proportion to their width, while the reverse obtains in some Crucifers; in the Crassulaceæ they persist for some time, attaining a considerable size, and are also succulent like the leaves. In some species of *Elæocarpus* (Tiliaceæ) the cotyledons grow considerably; thus, in *E. oblongus* they are about 6 cm. long and 2·5 cm. wide near the base, larger in fact than the leaf following; they are also very persistent, like the true leaves, which they resemble in appearance.

But the most interesting and peculiar case of subsequent growth is that which obtains in several genera of Onagrarieæ, especially *Clarkia* (fig. 4), *Eucharidium*, and some species of *Œnothera*,

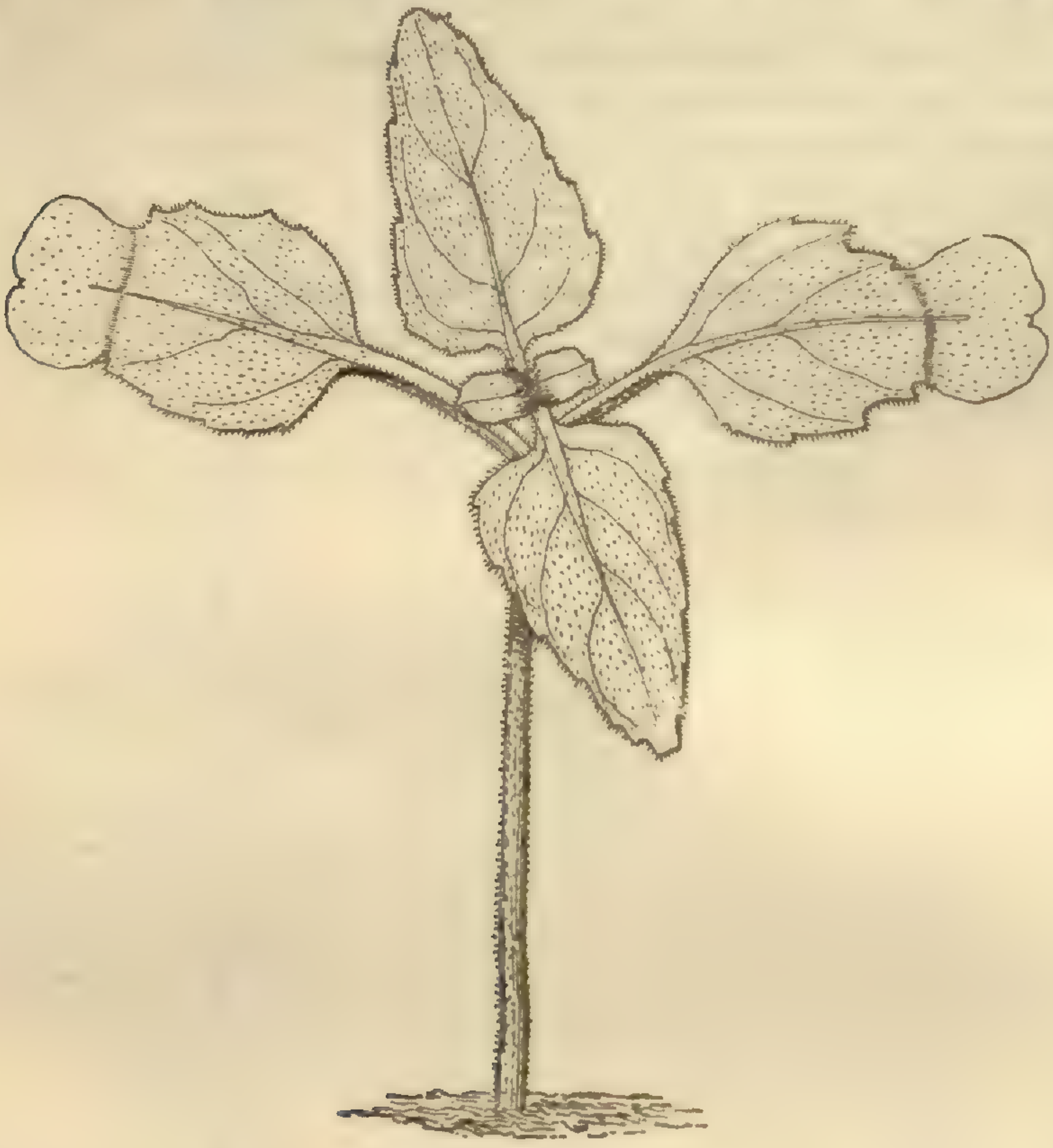

FIG. 4.

Clarkia integripetala. Seedling 17 days old. × 2. The original cotyledon is easily distinguished at the apex of the subsequent growth.

where an intercalary growth supervenes at the base of the original cotyledon, which thus becomes carried up on a structure many times larger than itself, and recalling in form and appearance the primary leaves. The original cotyledon remains almost unchanged at the apex of the new growth, from which it is sometimes separated by a constriction. *Embelia Ribes* affords an isolated instance among the Myrsineæ. In *Streptocarpus*, one of the two or sometimes three cotyledons becomes very large and much altered, and forms the first foliage leaf, and the single cotyledon of *Cyclamen* behaves in the same way, while the hypocotyl becomes the well-known, fleshy, persistent rootstock. In these quite

exceptional cases an after-growth brings out a relation not previously manifest between the seed-leaves and those which follow; frequently, however, there is a gradation from the cotyledon to the leaf shape ultimately assumed, as *e.g.*, in species of *Clematis*, *Ranunculus*, *Passiflora* (fig. 5), especially where the latter is divided or compound; but sometimes there is an abrupt transition to the normal leaf, even where this is of a highly complex character, as seen in the figure of *Acacia Burkittii*, where the leaves immediately following the cotyledons are bipinnate; in other Acacias the first leaves are similarly compound, while the later are reduced to phyllodes.

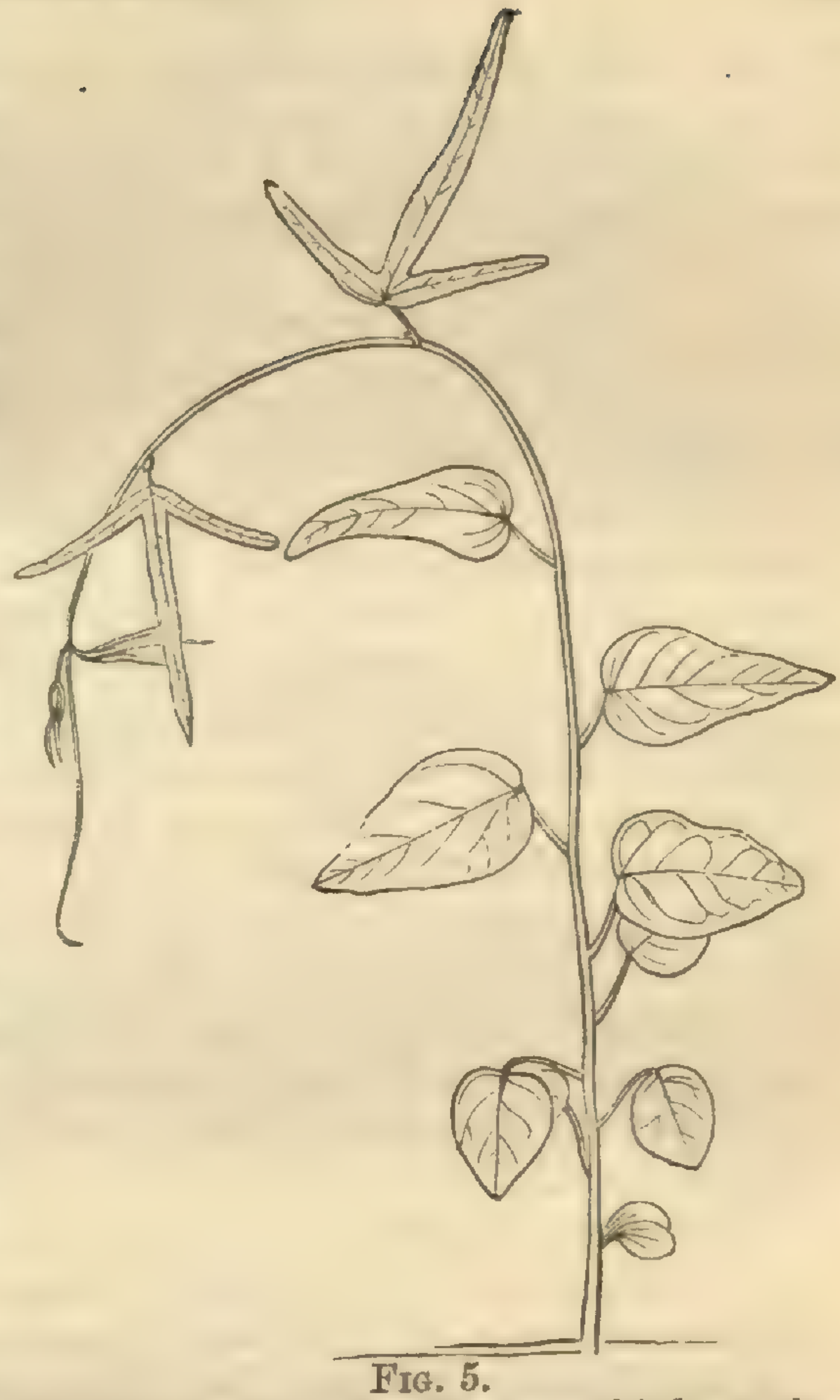

FIG. 5.
Passiflora cærulea. Seedling, one-third nat. size.

Finally, we may call attention to the marked difference between the cotyledons and first leaves respectively in two of our species of Primula, the common Primrose (*P. vulgaris*) (fig. 6), and the Bardfield Oxlip (*P. elatior*) (fig. 7).

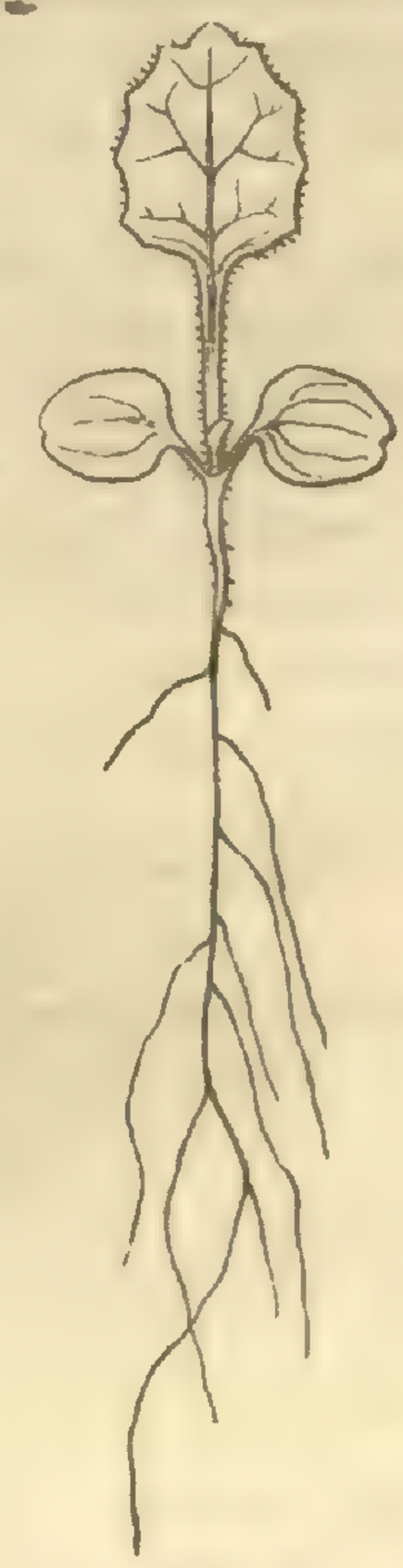

FIG. 6.
Primula vulgaris.
Seedling, nat. size.

FIG. 7.
Primula elatior.
Seedling, nat. size.

These few examples must suffice to give an idea of the scope of the book and the amount of information it includes. Though to some extent a book of reference, a look through its pages will prove of deep interest, while careful study will bring to light many relations hitherto unnoticed; the most hurried observer must fain admit that cotyledons and their ways are very wonderful, while the anxious

student will welcome, perhaps not a solution,—that, we fear, is still a great way off,—yet a solid contribution towards the means for solution of the problem involved in the form of the seed-leaves and its relation to those which follow.

A. B. Rendle.

ARTICLES IN JOURNALS.

Annals of Botany (Dec.).—C. A. Barber, '*Nematophycus Storriei*,' sp. n. (2 plates).—B. M. Davis, 'Development of frond of *Champia parvula* from the Carpospore' (1 plate).—K. Goebel, 'The simplest form of Moss' (1 plate.)—T. Johnson, '*Stenogramme interrupta*' (1 plate).—W. B. Hemsley, 'A drift-seed (*Ipomæa tuberosa*)' (1 plate).—L. Elvera, 'Cause of physiological action at a distance.'—P. Groom, 'Thorns of *Randia dumetorum*.'—Id., 'Monstrous flower of *Nelumbium*.'—Id., 'Embryo of *Petrosavia*.'—J. C. Willis, 'Distribution of seed in *Claytonia*.'

Bot. Centralblatt. (Nos. 48–49). — W. Scharf, 'Beiträge zur Anatomie der Hypoxideen' (No. 50).—F. Höck, 'Begleitpflanzen der Buche' (No. 51). — A. Harsgirg, 'Neue biologische Mittheilungen.' (No. 52).—T. Loesener, 'Zur Mateangelegenheit.'

Botanical Magazine (Tokio). — (Nov. 10). *Millettia purpurea* Yatabe, sp. n.

Bot. Notiser (häft. 6).—B. Jönsson, 'Inre blodning hos vaxten.'—R. Sernander, 'Ytterligare några ord om substratets betydelse för lafvarne.'—N. C. Kindberg, *Timmia arctica*, sp. n.

Bot. Zeitung (Nov. 25, Dec. 18).—H. Rehsteiner, 'Zur Entwicklungsgeschichte der Frucht-körper einiger Gastromyceten.'

Gardeners' Chronicle (Dec. 10).—*Costus unifolius* N. E. Br., n. sp. (Dec. 17). *Disa Stairsii* Kränzlin, sp. n. — (Dec. 24). *Asystasia varia* N. E. Br., sp. n.

Irish Naturalist (Dec. 1).—G. E. Barrett-Hamilton & C. B. Moffatt, 'Characteristic Plants of Wexford.'

Journal de Botanique (Dec. 1). — N. Karksakoff, 'Quelques remarques sur le genre *Myriotrichia*.'—(Dec. 15). H. Hua, '*Polygonatum* et *Auliconema*.'—Hue, 'Lichens de Canisy.'—(Dec. 15). De Lagerheim & N. Patouillard, '*Sirobasidium*, nouveau genre d' Hyménomycètes hétérobasidiés.'

Journ. R. Microscopical Soc.—W. West, 'Algæ of English Lake District' (2 plates).

Midland Naturalist (Dec.).—W. Mathews, 'County Botany of Worcester' (cont.).

Oesterr. Bot. Zeitschrift. (Dec.).—P. Ascherson, 'Zur Geschichte der Einwanderung von *Galinsoga parviflora*.' — E. v. Halàcsy 'Beiträge zur Flora der Balkanhalbinsel' (*Ranunculus Thasius*, sp. n.), (concl.). — A. v. Degen, '*Campanula lanata* Friv.' — L. Adamovic, 'Beiträge zur Flora von Südostserbien.'

BOOK-NOTES, NEWS, &c.

The *Botanical Gazette* for November reprints from the *Journal of American Folk-lore* a long and interesting list of popular

American plant-names, compiled from various trustworthy sources by Mrs. Fannie D. Bergen. It is intended as a preliminary to a complete collection of these names, which it is hoped may do for the United States what the *Dictionary of English Plant-names* has done for Great Britain.

Messrs. A. Stewart and R. Lloyd Præger have published in the Proceedings of the Royal Irish Academy (3rd Series, ii., No. 2) a full and interesting "Report on the Botany of the Mourne Mountains, Co. Down," from which we make an extract on p. 21. The nomenclature is somewhat odd: e. g., "*Lepidium smithii* (Linn.) Hook."

The price of the *Kew Bulletin* has been raised to fourpence monthly. The contents of the November number are entirely economic.

A new magazine, to be devoted entirely to Orchids, is announced to appear on the 1st of January. There are already a large number of Sunday newspapers, but a Sunday periodical of this class is a novelty, and, as it seems to us, an undesirable one. *The Orchid Review*, as it is to be called, will be under the editorship of Messrs. R. A. Rolfe and F. Leslie. Mr. Rolfe's connection with Kew will be of great advantage to the new venture, and the "Decades of Orchids," which have appeared somewhat out of place in the *Kew Bulletin*, will no doubt form an important and appropriate feature of *The Orchid Review*.

A new monthly magazine, to be called *Erythea*, will begin with the new year. It will be under the direction of members of the Botanical Department of the University of California, the editor being Mr. Willis L. Jepson.

We observe in *Grevillea* a note that "the statements respecting [its] proprietorship that have appeared in the *Journal of Botany* and elsewhere are entirely imaginary and incorrect." The point is one of the very slightest importance, but, so far as we are concerned, our information that *Grevillea* had become the property of Mr. Batters was derived from Mr. Batters himself, who might very reasonably have been supposed to speak with authority on the matter.

OBITUARY.

We greatly regret to record the death of Christopher Parker Smith, an authority of prominence in the study of British *Muscineæ*, especially *Hepaticæ*. He was born at Brighton on the 13th October, 1835, and began to work at botanical subjects (at first flowering plants) in 1858, the year of his marriage. About twelve years after this date he acquired the herbarium of the late Mr. E. Jenner, A.L.S., and particularly after this time devoted himself with enthusiasm to botanical pursuits. His vigour and energy as a collector brought him into communication and corres-

pondence with many contemporary British botanists; and he enjoyed the friendship of Mr. Mitten, Mr. West of Bradford, and the late Mr. G. Davies, with whose work he was in fullest sympathy, and of whom he gave some account in this Journal for 1892 (p. 288). His friendship for Mr. Davies was in fact no ordinary one, and the death of this enthusiastic fellow-worker made a very visible impression on him. Mr. Smith belonged to the class of naturalists who are so averse from publication that it becomes a matter of research to their brethren to discover their hidden stores of knowledge. Singularly enough, he combined this public reticence with a keen pleasure in orally discussing subjects of work and research, and no one could fail to be struck by his great and wide knowledge, and the remarkable readiness with which he brought it to bear. In this way he served other naturalists with great success. Now and then Mr. Smith could be surprised into publication, and the Annual Reports of the Brighton Natural History Society testify to the excellence of his work. There is a report of a paper of his "On Mosses" (12 Nov., 1869); and at the following meeting (9 Dec.), he read an excellent one "On the gemmæ of Mosses." In January, 1876, he read a singularly interesting paper "On Bees," which illustrates, or rather merely indicates, his wide knowledge of Natural History. It is, however, by his acutely critical knowledge of British *Musci* and *Hepaticæ* that Mr. C. P. Smith has made his name known and respected. His *Moss-Flora of Sussex* (Brighton, 1870, 8vo), will remain as the best memorial of the sound and painstaking work of this botanist. He devoted all his spare time and all his holiday to his favourite pursuit, and during recent years made annual excursions to the Highlands of Scotland in search of novelties. His death, after ten months of illness, from cancer in the stomach, occurred at Hassocks, on the 15th November.

G. M.

Christopher Parker Smith died on the 15th November, in the 57th year of his age, at his residence, Tulley Veolan, Hassocks. For many years an assiduous collector of plants which delighted him alike for their varied form and structure, he was a skilled hand in making sections of vegetable tissue. He acquired, after the death of Edward Jenner, author of the *Flora of Tunbridge Wells* and of the drawings in Ralph's *Desmidiæ*, all the botanical specimens collected by him during his periodical visits to every farm-house in Sussex, on foot, in pre-railroad times. This collection Mr. Smith had but recently got into order. Continually on the railway between Brighton and London, and well posted up in the best thought of the time, Mr. Smith was ready to join in conversation on the most diverse subjects. Nothing seemed to please him better than to make extracts or copy figures from the rarer books on botany, and for this purpose he was a frequent visitor to South Kensington. Ever at the service of his many friends, Mr. Smith had but little time to devote to consecutive investigation. He will be greatly missed by those who always found him a cheerful companion, a sagacious counsellor, and firm friend.

W. Mitten.

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THIS Index, which has been published in the 'Journal of Botany' during the last four years, has elicited much more general interest than its compilers expected. It originated in the supposition that the want of such a reference-list to byegone workers in Botany, which we ourselves had often felt, might also be shared by others; and the very numerous expressions of interest and approval which we have received have shown that we were fully justified in our belief.

During its progress through the pages of the Journal, we have made numerous additions to the information given, and some corrections. The list of names has also been considerably extended, and will be brought down to the end of 1892. We have been encouraged to think that a reprint of the list, embodying these additions and corrections, would be convenient for those who find it somewhat difficult of consultation in its present form, and would also serve as a handy volume of reference for others specially interested in Botanical Biography.

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Carex rhynchophysa, *C.A.Mey.*

A NEW IRISH SEDGE.

By R. Lloyd Praeger, B.E., M.R.I.A.

(Plate 332).

Carex rhynchophysa, which I have now the pleasure of adding to the British flora, is a large and handsome plant, closely resembling *C. rostrata*, of which some of the continental authorities have described it as a variety. I am indebted to the kindness of Mr. Arthur Bennett for the following description, synonymy, &c. :—

Carex rhynchophysa C. A. Meyer in Ind. sem. Hort. bot. Imp. Petrop. No. 9, suppl. p. 9 (1844).

C. ampullacea β. robusta Weinmann, Enum. stirp. agr. Petrop. p. 92 (nomen), (1837).

C. bullata Schkur, *β. lævirostris* M. N. Blytt, Fl. Chr., ex Fries, Mantissa, ii. 59 (1839).

C. lævirostris Fries in Bot. Notiser, p. 24 (1844).

C. ampullacea β. obesa Hartmann; Handb. Skand. Flora, ed. 5 (1849).

(*C. rhynchophysa* Liebman, Mexican Halv. p. 76, 1850, is quite a different plant, and is *C. physorhyncha* Steudel, Cyper. Plant. 219, 1855.)

Exsiccata.—Fries; Herb. Normale, fasc. 6, No. 74; Herb. Fl. Ingrica, Cent. 5, No. 732.

Figures.—Flora Danica Supp. 1, t. 36 (1853); Anderson, Cyper. Scand. t. 8, fig. 108 (1849).

Distrib. — Finland (10 provinces); Russia, Perm, Wiätka, province of Ingermanland (St. Petersburg); Norway, Lapland, Sweden, provinces of Vermland, Ostrobothnia, and Vesterbotten. Silesia, Transylvania. Indicated also in Siberia by Gmelin; Davuria.

Plant subcæspitose, 24–34 in. high; leaves $\frac{3}{8}$–$\frac{5}{8}$ in. broad, tapering-acute at the apex, as long as, or longer than, the culms, scabrid on the edges, the sheaths of the lower leaves loose, those of the middle ones closed; culms erect, semiterete at the base, triangular in the middle, and from the lowest spike upwards usually triquetrous; bracts very leafy, longer than the male spikes; spikes curved outwards at the base, then nearly erect, the lowest with a longer peduncle; female spikes 3–4, the uppermost usually with male flowers at the apex (and sometimes the second one also), $1\frac{3}{4}$–$3\frac{1}{2}$ in. long; male spikes 4–6, sessile, $\frac{3}{4}$–$2\frac{1}{4}$ in. long, in flower usually adpressed to the stem, in fruit diverging or semi-patent; glumes of the female flowers (nearly hidden when in ripe fruit) linear-lanceolate, acute, the apex often slightly recurved, reddish brown, with a broad band of pale green down the centre, and scarious at the apex; glumes of the male flowers lanceolate and apiculate, pale yellowish brown, with scarious edges; fruit globose, inflated, tapering into a rather long cleft beak, with slightly diverging lobes, with 10–12 fine nerves (prominent only when dried), yellowish when ripe, the apex of the spikes often suffused

with dusky red; stigma trifid, long, deeply cleft to the beak of the fruit; nut scarcely half the length of the fruit, and only one-third as broad, narrowed at the base, and finely striated.

A peculiar species with much of the habit, in the lower part of the culms, of *Scirpus sylvaticus;* the structure of the leaves is somewhat between *C. aquatilis* and *C. riparia*. The Norwegian specimens have the leaves more like *C. riparia*, while those of Russia and Mongolia are between *riparia* and *Scirpus sylvaticus*. The spikes are *ampullacea*-like, but very much stouter, and much like the American *Carex bullata* Schkuhr. In drying, the fruits become curiously compressed by the apex being forced into the distended portion, and thus giving the spikes an odd aspect.

Roughly, in looking for the plant, it may be said to be a *Carex* with thick *ampullacea*-like fruiting spikes, and the leafage and culms of *C. riparia*.

Over its area of growth it seems to be a sparsely distributed species, and is most abundant in the deep bogs on the river and lake shores in Finland.

The circumstances connected with the discovery of this plant in Britain were attended by a rather humorous scene, which I trust it will not be considered heresy to relate in the grave and strictly scientific pages of this Journal. On August 14th last I was botanising along the marshy shores of Mullaghmore Lough, a lakelet occupying a shallow hollow in the Lower Silurian or Ordovician rocks that cover the central portion of the county of Armagh. Tall plume-like tufts of *Cicuta* grew around, and the numerous bog-holes were spangled with the white flowers of *Nymphæa*. Presently my eye was caught by a patch several feet in diameter of a large sedge, growing in the centre of a deep drain some ten feet in width, which communicated with the waters of the lake. It was immediately distinguished from the groves of *Carex rostrata* which grew around by its taller growth and more glaucous leaves. It grew in between two and three feet of water, the total height of the plant being about four feet. How to get at it was the difficulty. The bottom of the drain was soft, deep mud. The sides were soft peat. I stretched over and examined the clump with my stick. A single fruit-stem was disclosed, much shorter than the leaves, and bearing several stout sessile erect spikes of fruit, with long leaf-like bracts. I again and again tried to hook it in with my stick, but unsuccessfully—tantalizing! Meanwhile, my eccentric movements had attracted the attention of the inhabitants of the immediate neighbourhood. A small boy who had been lying half-asleep under a hedge sat up and stared with all his might at this novel fishing. The cows which he was herding approached cautiously, and stood mystified in a semicircle. A flock of ducks hurried in from the lough to see what was up, and paused within a few yards, expressing their curiosity in loud quacks of enquiry. All was excitement and suspense. Ah! I had got the sedge safely hooked this time. Slowly it was drawn towards the bank, and my hand closed on the stem. Then came the *dénouement*. The edge of the bank suddenly gave way. There was a frantic spring, and

then a huge splash. The ducks gave one universal quack, and fled from the scene with a prodigious flapping; the cows kicked up their heels, and scattered precipitately; the small boy, convinced that the water-bogie was after him at last, fled from the spot in terror; and the botanist emerged, dripping with mud and water, but clutching firmly in his hand the first British specimen of *Carex rhynchophysa!*

Unable to arrive at a satisfactory conclusion as to its determination, I passed the specimen to my friend Mr. S. A. Stewart, who returned it, marked "*C. rostrata*." The general appearance of the plant was so distinct from that of the *C. rostrata* which grew near, that I was not satisfied with this determination, and sent it to Mr. Bennett. That gentleman has now submitted it to the most rigid examination, and though hesitating at first to add a plant to the British flora on the strength of a single specimen without the clearest proof, he is now convinced of its identity with *C. rhynchophysa* of C. A. Meyer.

ON SOME CASES OF INVERSION.

By Maxwell T. Masters, M.D., F.R.S.

The relative position of particular "members" or tissues is so important a matter morphologically, and from the point of view of systematic botany, that any deviation from the ordinary mode of orientation is worthy of notice. I propose, therefore, in the following note to call attention to a few selected illustrations. The causation and significance of these is probably very diverse, a circumstance that renders it the more desirable that they should be brought together for comparison and ultimate classification.

Reversed position of the xylem and phloem elements.

A noteworthy illustration of this occurs in the fruit-scale of Abietineæ, indeed of all the Conifers. In the bract the arrangement is the same as in the leaf, that is to say, the phloem is towards the dorsal surface of the bract, whilst the xylem is directed towards the ventral surface. In the fruit-scale the position is exactly reversed, the xylem is found on the outer or dorsal side, the phloem towards the ventral face. This arrangement points to the conclusion that the scale in question is a "cladode" or flattened shoot, a part only of whose vascular system is present. The lower part (which, if present, would complete the vascular cylinder) is undeveloped. It will be remembered that Casimir de Candolle gives a similar explanation of the position of xylem and phloem in an ordinary leaf-blade, but in this case it is the upper half of the vascular system which is wanting. The subject is discussed in my paper on the morphology of the Conifers in the *Journal of the Linnean Society*, vol. xxvii. pp. 276 and 302 *et seq.*, and need not be further alluded to here.

A common occurrence on the leaves of *Yucca flaccida* is the production of tubular horn-like processes from the margins. In the central vascular bundles the arrangement is normal, but in those of the tubular portion the position of xylem and phloem is reversed, the phloem being nearest to the axis.

Reversed arrangement of the palisade cells.

The palisade cells are in most instances formed in the proximal or ventral portion of the leaf, but an exception to this is met with in the leaves of *Picea ajanensis* and some others, where the palisades are formed in the dorsal part of the leaf, the leaves on the lateral, horizontally spreading branches being either bent or twisted at the base, so as to expose the dorsal surface to the light. The stomata are on the ventral surface in this case, but no change occurs in the relative position of the xylem and the phloem.

A similar transposition is often observable in cases of enation from the leaf, thus in the orange an outgrowth from the under surface is sometimes met with, having its ventral or green surface turned in the opposite direction from that of the primary leaf, thus:—

where the thick lines represent the dark green surfaces, the thin lines the paler surfaces. Occasionally in the Portugal Laurel (Dickson, *Journal of Botany*, 1867, 322) in *Gesnera allagophylla*, and constantly in *Xanthosoma appendiculatum*, similar outgrowths are observable, with a similar transposition of parts. A similar reversal may be seen in the corona of *Narcissus*, which is an enation from the perianth. In one form of this, figured in the *Gardeners' Chronicle* for March 31, 1888, p. 405, there are peculiar frilled outgrowths from the corona itself, and in these, according to Dr. Scott, the arrangement of the fibro-vascular bundles is the same as in the perianth segments, but contrary to the arrangement in the corona itself. In the corolla of a *Cyclamen* from which a frill-like outgrowth proceeded, the orientation of the fibro-vascular cords was the reverse of that which obtains in the corolla itself. Owing, however, to the imperfect differentiation of the tissues, it is not easy or indeed possible to trace the exact relation of the tissues in all of these cases.

Reversed position of the stomata.

Although the stomata are by no means confined to the dorsal surface of the leaf, yet they occur there generally in greatest numbers. An exception may be noted in the cotyledons of many Conifers and in the adult leaves of junipers and *Picea ajanensis*, where the stomata occur chiefly on the ventral surface. It is not necessary to do more than allude in passing to the position of the stomata on the upper surface of the cladode of *Ruscus androgynus*, which becomes twisted at the base, so that the stomatiferous surface assumes a downward direction.* The development of stomata on the

* Dickson, "Foliage leaves of *Ruscus*," *Trans. Bot. Soc. Edinb.*, vol. xvi. part 1 (1885), t. ix.—xii.

morphological upper surface of the leaf, associated with a twist of the leaf, is witnessed in *Alstræmeria*, *Bomarea*, various species of *Allium*, and other monocots. No change occurs in these cases, in the relative position of the xylem and phloem.

Inverted distribution of colour.

In a flower of an ordinary *Gloxinia* the richest colouration occurs in the interior of the tube, in a position corresponding to the ventral surface of the leaf. Occasionally petaloid outgrowths arise from the outer surface of the ordinary corolla, these outgrowths being sometimes so regular as to form a second corolla outside the first. In these enations the deep colour is outside. The thick line in the following diagram may represent the coloured surfaces, the inner ones the paler portions. In some of these cases the enation forms, by the coalescence of its margins, a complete tube, and when that is the case, the deepest intensity of colour is inside, as in the original flower.

Similarly a peculiar malformation occurs occasionally in *Calceolaria* in which, in addition to the usual two stamens, a third is developed in the form of a petaloid bag or tube within the corolla, and coloured in the same manner, except that whilst in the corolla the deepest colour is outside, in the petaloid stamen it is inside.*

Inversion of the flower.

In most Orchids the sepals in the adult flower are so arranged that one is posterior and median, the other two are lateral, while the petals are placed alternately with the sepals, and consequently have the lip or odd petal placed anteriorly in the middle line of the flower. This position is generally attributed to torsion of the pedicel, as the original position of the parts is just the reverse of what has just been mentioned. If, on the one hand, no torsion takes place, or if, on the other hand, a complete spiral turn is

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* The examination of Calceolarias presenting the peculiarities just mentioned, induced me to study the mode of development of the flower. The primary floral tubercle soon loses its hemispherical form and becomes somewhat angular. From one angle the posterior sepal is developed before the others; next in order, and nearly if not quite simultaneously, appear the two lateral sepals, and lastly the anterior sepal. The corolla appears first as an undivided ring, which is soon overtaken in its development by the two lateral stamens, which are produced simultaneously and which are the only two which are developed. When the two stamens are considerably advanced in their development the limb of the corolla begins to be developed in the shape of two lobes anterior and posterior, which are, for a time, of equal size; but the anterior or inferior one speedily increases in size to form the lower lip of the corolla. The pistil is very late in development and consists of two tubercles placed antero-posteriorly. Each becomes somewhat two-lobed before the style is produced, so that when the cavity of the pistil is closed, the pistil is slightly four-lobed. The flower is therefore numerically irregular from the first, and there is no trace of the fifth sepal or petal, nor of the three stamens. Eichler attributes the fourfold calyx to the union, or want of separation of two sepals, but there is no trace of fusion of two sepals.

Fig. 1.—Normal Barley, germinating.

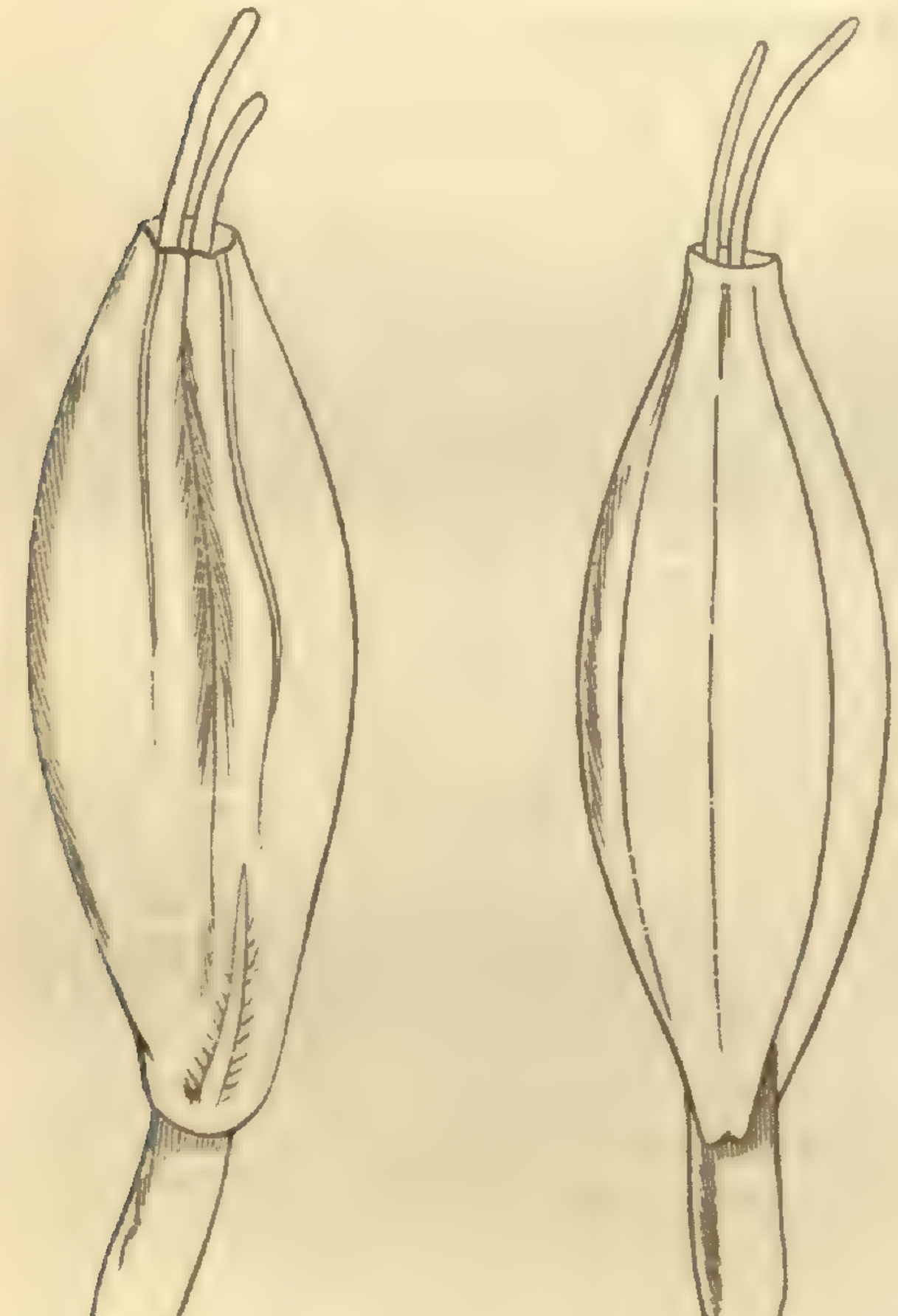

Fig. 2.—Inverted seeds of Barley.

effected, then the flowers retain their primitive orientation. It must, however, be admitted that the evidence of any such torsion as is above described is often not conspicuous. Be this at it may, flowers in which the lip is uppermost, as in some species of *Catasetum*, may be taken to represent the primitive condition. A very interesting case occurred during the past summer, and which was kindly communicated to me by Mr. Douglas. It was a case of a *Cypripedium* bearing two flowers on the same inflorescence. In one of these flowers the odd sepal was anterior and the lip posterior or superior. In the other the odd sepal was posterior or superior and the lip anterior, as is usually the case. No trace of torsion was visible in the axis supporting the flower, nor in the ovary.

In *Gladiolus* on the same inflorescence some of the flowers may have the odd sepal next to the bract, or more rarely next to the axis, with corresponding changes in the other parts of the flower. See W. & A. Bateson, *Journ. Linn. Soc.* xxviii. p. 490 (1891).

In *Pinus* the adult cone is usually deflexed, but in some cases it retains its erect position.

The complete inversion of parts in the carpel and seed of barley, figured from specimens sent by Mr. Laxton, may also be mentioned (see figs. 1–4). The plu-

mule here made its appearance from the base of the grain, while the roots proceeded from the other end—a topsy-turvy arrangement, the explanation of which has not yet been revealed.*

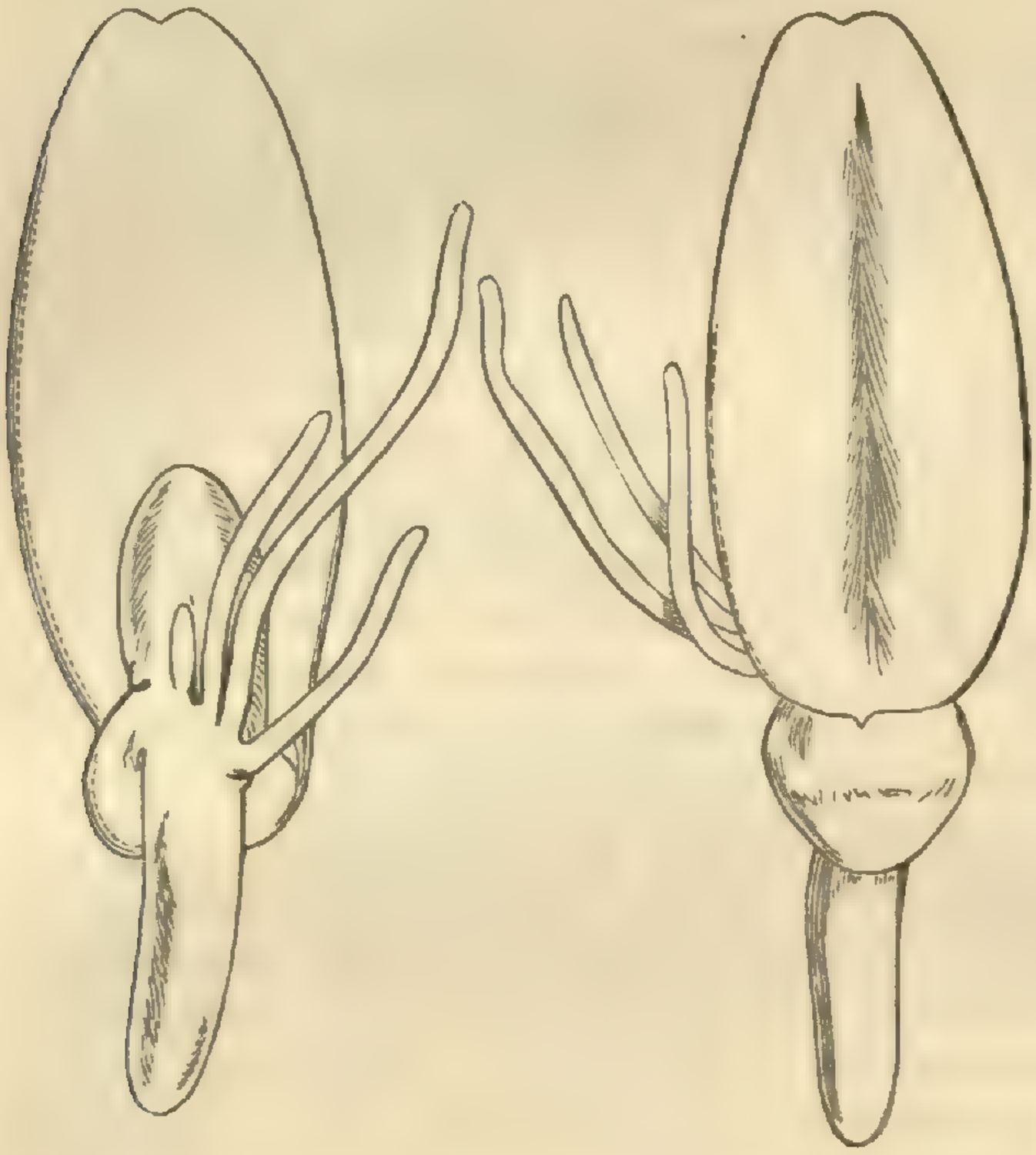

Fig. 3.—Barley grain with husk removed, showing the parts of the embryo.

Fig. 4. Embryo from the side.

Reversed position of the carpels.

In the genus *Citrus*, as also in *Cratægus*, *Prunus*, &c., supplementary carpels are occasionally met with, and whilst the ventral sutures of the normal carpels are directed centrally, (×, those of the adventitious productions are turned outwards,)×. In the pomegranate (*Punica*) it will be remembered that two tiers of carpels exist. In the lower one the placentas are axile, while in the upper series they are parietal,† but, according to Payer and Baillon, this is due to the bending over of the apex of the ovary in the case of the upper series, to such an extent that the organic summit is ultimately placed lower than the base. This change seems more especially to occur in cases where the abnormal carpels are really metamorphosed stamens (pistillody of the stamens). Where the increased number of carpels is really due to an augmentation of the pistillary whorls (pleiotaxy) the carpels are arranged in the ordinary manner.

Reversed position of the gills of mushrooms.

A very frequent malformation in Agarics is one in which the top of an ordinary pileus bears a second, but in an inverted

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* See *Gard. Chron.*, March 15, 1873, and in Dr. Dammer's German translation of my *Vegetable Teratology* (1886), pp. 244—246.

† Lindley, *Vegetable Kingdom*, p. 735.

position (fig. 5). All degrees of this change may be met with, the most remarkable perhaps being one illustrated by Mr. Worthington Smith in the *Gardeners' Chronicle* for Feb. 24, 1887, in a species of *Russula*, where three adventitious pilei sprang from the top of the normal one; of these, two were reversed, whilst the third had the gills turned downward in the ordinary manner. See also Mr. Smith's article in *Gard. Chron.*, July 26, 1873.

Fig. 5.—Mushroom with a second one growing from its pileus in an isolated position; a third pileus is in the natural position.

It will thus be seen that these cases of inversion are numerous, and cannot be attributed to any single cause. In ordinary chorisis, either radial or tangential, and which indeed is only a modified process of ramification, part succeeds part without any inversion. But in the class of cases known as enations or outgrowths from an already completed structure, the differentiation of the tissues often takes place in an inverted direction, and furnishes additional evidence in support of the view that there is no fundamental difference between caulome and phyllome.

In other cases the inverted position seems to be due to a reversion to a primordial or even to an ancestral state of things, but what brings about this sudden resumption of pristine ways is an utter mystery.

AN ESSAY AT A KEY TO BRITISH RUBI.

By the Rev. W. Moyle Rogers, F.L.S.

(Concluded from p. 10.)

84. R. CORYLIFOLIUS Sm. — Near *R. dumetorum*, but with *st.* usually much *rounder* and very *nearly* or quite *glabrous*; *prickles slenderer*, more subulate and *less unequal*, *and very few* (*if any*) *acicles and stalked glands*. L. 5-nate-pedate, often large. Lts. often much as in *dumetorum*, but usually with thicker paler felt beneath; while in the typical plant (*R. sublustris* Lees) the term. lt. is conspicuously different in outline. Pan. somewhat irregular, more or less corymbose, often with 2 or 3 long axillary branches; *rachis and ped.* grey-felted, *sometimes quite eglandular*, *and seldom having more than a few sunken or very shortly stalked glands* (chiefly at the

top), and acicles few or none. *Sep. reflexed in fr.* A puzzling collection of forms intermediate between *R. dumetorum* and *R. cæsius.*

a. *R. sublustris* (Lees). — *St. nearly round*, more or less striate, reddish, with very scattered slender and not very unequal prickles usually slightly declining from rather a small base. *Lts. sharply doubly serrate*, ashy-felted beneath; *term.* roundly cordate-*acuminate*, and often *more or less 3-lobed.* Pan.-rachis nearly straight. A very common form in most parts of England; nearly eglandular.

b. *conjungens* Bab. *R. cyclophyllus* Lindeb.? — *St. rather more angular* and often stouter, reddish. Prickles less scattered, rather short but strong, declining or slightly deflexed from a long base. *Lts.* all usually *broader*, rounder, and with somewhat *crenate-serrate* toothing; *term.* roundly cordate-*acute*, *very broad*, *not lobate.* Pan.-rachis nearly straight. Perhaps as common as *sublustris* and as nearly eglandular, and connected with it by numerous intermediates.

c. *R. fasciculatus* P. J. Muell. *R. purpureus* Bab. — *St. bluntly angular*, *subsulcate above*, usually dark purple on the upper side, *slightly hairy and with a good many scattered shortly stalked glands.* Prickles many, unequal, slightly declining from a large base. *Lts. doubly dentate-serrate*, usually pale green-felted beneath; term. roundly ovate-acuminate or obovate-cuspidate, subcordate, sometimes lobed on one side; interm. and bas. sometimes united into a single deeply-lobed lt. Pan. leafy, *rachis somewhat flexuose*, *hairy*, *often considerably glandular.* Apparently a frequent plant in the Midlands, and much nearer to *R. dumetorum* (if indeed it can be kept apart from it) than the other two vars. Prof. Babington now considers it practically identical with *R. Wahlbergii* Arrh., while Areschoug (*Observations on Rubus*, 1887) would put the latter nearer to *sublustris*, as (judging from my Scandinavian specimens, as well as his description) I should also do.

85. R. Balfourianus Blox. — *St.* roundish, *with a good many scattered fine hairs* (both single and clustered) *and a few* (usually very few) acicles and *stalked glands.* Prickles few, slender, nearly patent from a rather small compressed base. L. 5-nate. *Lts. large*, irregularly and often doubly dentate-serrate, occasionally lobate, green and hairy on both sides, rugose above, paler and soft beneath; term. usually broadly elliptic or roundish acuminate subcordate. *Pan. very loose*, *with long erect-patent few-flowered distant branches and a flexuose hairy rachis*, having usually a good many *unequally scattered stalked glands* (which seldom exceed the hair), an occasional acicle, and a few very slender patent prickles. *Sep.* ovate-acuminate-*attenuate*, *hairy and glandular*, *soon becoming erect.* Pet. suborbicular, often very large, purplish or white. *Fr. black-purple*, *large*, *and richly flavoured.* Stam. rather short, but usually exceeding the flesh-coloured styles. Widely but rather thinly distributed.

The typical plant, with its exceptionally large l., fl. and fr., its open few-flowered hairy and glandular pan., and its attenuate erect sep., seems distinct enough; but there are frequent intermediates connecting it with *R. corylifolius.* Not far removed from some of them is a very handsome plant growing in some quantity at Niton, I. of Wight, which Dr. Focke thinks is *R. Holandrei* P. J. Muell.

It has a brown bluntly angular subglabrous and almost polished st., with more crowded broader-based patent prickles, and a longer narrower more prickly and more leafy pan., with the upper branches somewhat fasciculate; while in other respects it seems hardly distinct from the small-flowered forms of *R. Balfourianus*. A somewhat similar plant occurs at Evershot, Dors.

The "*R. althæifolius* Host." of *British Rubi* and *Bab. Man.* seems of too indeterminate a character to claim a place in our list at present; while the name "*R. deltoideus* Müll.," which takes its place in *Lond. Cat.* ed. 8, belongs, Dr. Focke assures me, to a hybrid, "*R. cæsius* × *tomentosus*," which we cannot expect to find in Britain, where *R. tomentosus* is unknown.

86. R. CÆSIUS L.—*St. prostrate* from a low arch, *round*, usually slender and very *glaucous*, with small scattered subulate declining or deflexed prickles; hairs, stalked glands, and acicles usually very few. *L. almost always 3-nate. Lts.* green on both sides (except in var. *pseudo-Idæus*), *unevenly incise-serrate*, or rarely doubly serrate; term. ovate, rhomboidal-ovate, or 3-lobed; lateral usually bilobed, subsessile. Pan. lax, usually small, often nearly racemose with very long-stalked fl. *Sep.* green, ovate-acuminate, *with long point clasping the glaucous fr.* Pet. obovate, notched. Pollen regular in the typical plant.

This species hybridises so freely, that its numerous forms hardly admit of exact distinction. I know scarcely anything of the following vars., or their distribution. For synonymy, &c., see *Journ. Bot.* 1886, p. 236, and *Engl. Bot.* Suppl. to 3rd ed., pp. 122–124.

a. *aquaticus* W. & N.; *umbrosus* Reich.; *agrestis* Bab.—St. very slender, glaucous-green. *Prickles few, very small.* Lts. thin, lobate-serrate; term. rhomboidal-ovate-acuminate, rounded below. Pan. small, "often nearly simple, and, when otherwise, the branches are rarely more than once divided."

b. *R. tenuis* (Bell Salt.). *R. degener* P. J. Muell. ? — St. very slender. *Prickles many*, small, *stout*, mostly equal, *much deflexed from considerably enlarged bases. Lts.* rather *doubly* than lobate-*serrate; term. obovate*-acuminate, always narrowed below.

c. *arvensis* Wallr.; *ligerinus* Genev.; *ulmifolius* Bab.—St. often not so slender as in a. and b., purplish. Prickles many, small, deflexed or declining. *Lts. slightly rugose*, lobate-serrate, *very broad; term. long-stalked*, roundly cordate with short point, *often 3-lobed*. Mostly very large.

d. *intermedius* Bab. — *St. thicker*, greenish-purple. *Prickles* many, slender, *very unequal, subpatent.* L. often 5-nate. Lts. lobate-serrate; *term. triangular-cordate-acuminate*, 3-lobed or divided into 3 sessile lts. *Stalked glands and acicles* few (as in a., b., and c.), but *shorter and stouter*. Connects c. with e.

e. *R. pseudo-Idæus* (Lej.). — St. rather thick. *Prickles* slender, *violet-coloured*, subpatent. *L.* 3-nate or *5-nate-pinnate. Lts. ashy-felted beneath*. Obviously *R. cæsius* × *Idæus*.

f. *hispidus* W. & N.; *serpens* Godr. & Gren.—*St.* slender, *green*. Lts. lobate-serrate; term. obovate-acuminate, subcordate; lateral

with a large backward lobe. *Ped. and sep. with numerous stalked glands*, and felted, but scarcely at all hairy. *Drupelets many.*

Section II. Herbacei.—St. nearly or quite herbaceous. Stipules usually attached to the st. Fl. "umbellate," or nearly solitary. *Receptacle flat.*

Subsection I. Saxatiles.—St. slender, prostrate. Fl. umbellate or nearly so, or subsolitary. *Carpels distinct.*

87. R. saxatilis L. — *St. annual*, rooting, unarmed, or with scattered bristles. *L. 3-nate.* Lts. oblong-obovate, nearly equal. Fl.-shoot erect, with a terminal few-flowered umbel-like corymb. Pet. erect, white, equalling sep. Fr. of 1–4 distinct drupelets. In stony hill-country; rare in S. Engl.

Subsection II. Arctici.—No sterile st., but a long subterranean rhizome. Fl. term., solitary or subsolitary. *Carpels adhering together.*

88. R. Chamæmorus L. — *St. subterranean. L. simple, reniform*, 5–7-lobed, plicate. Fl.-shoot erect, unarmed, with *1 large dicœious term. fl.* Pet. large, white. Fr. of several large drupelets, first red, then orange. Alpine turf bogs; but descending below 2000 ft. on Axe-Edge, Derb.

Conspectus of the Groups of British Fruticosi.

A. St. tall, glabrous or with few hairs, not glaucous, with prickles mostly equal and confined to the angles. Usually without stalked glands. Stip. linear. Bas. lts. sessile, subsessile or stalked.

a. Sep. green, with narrow white margin:—

Suberecti. — Increasing mainly by root-extension. Mature l. green beneath. Pan. often simply racemose. No stalked glands. See p. 109 (1892 vol.).

b. Sep. grey- or white-felted, and either without white margin, or having only a comparatively inconspicuous one:—

Rhamnifolii.—St. usually rooting at the end in autumn. Mature l. green or white-felted beneath. Pan. usually compound. Stalked glands very rare, though occurring occasionally in small quantity, especially in pan. See p. 111 (1892 vol.).

B. St. arcuate or prostrate, rooting at the end in autumn, mostly hairy or furnished with stalked glands, seldom glaucous (except in Bellardiani), with prickles nearly equal or unequal, confined to the angles or scattered. Stip. linear or filiform. Bas. lts. distinctly stalked.

a. Large prickles on the angles of the middle and upper part of st. tolerably equal. Small prickles absent or present.

I. Pan. without stalked glands:—

Discolores. — St. bearing adpressed hairs. All the prickles equal, strong. L. 5-nate, white-felted beneath. See p. 202 (1892 vol.).

II. Pan. usually without stalked glands, or with comparatively few (in the typical plant) :—

Silvatici.—St. bearing patent hairs. All the prickles equal, or nearly so, of moderate size. See p. 204 (1892 vol.).

III. Pan. with stalked glands.

1. St. eglandular, or with scattered stalked glands :—

Egregii.—Prickles subequal, chiefly on angles. Pan. with some nearly equal stalked glands. See p. 266 (1892 vol.).

2. St. rough with crowded acicles and stalked glands :—

Radulæ.—Prickles unequal—the larger ones nearly confined to angles, and less unequal or subequal. Pan. side branches almost cymose. Stalked glands nearly equal. See p. 299 (1892 vol.).

b. Prickles conspicuously unequal—the larger and smaller irregularly mixed :—

Koehleriani. — Large prickles strong. Pan. side branches almost cymose. Stalked glands mostly very unequal. See p. 335 (1892 vol.).

Bellardiani. — Prickles mostly weak. Pan. usually racemose above, and with racemose side branches. St. frequently glaucous. See p. 3 (1893 vol.).

C. St. low-arching or trailing, glaucous, rooting at the end in autumn. Stip. broadened in the middle. Bas. lts. hardly stalked :—

Cæsii. — Prickles mostly aciculate. Stalked glands thinly scattered or numerous, rarely wanting. Pan. usually short, and nearly simple. See p. 8 (1893 vol.).

Additions and Corrections.

In this "Key" I have thought it best to make no attempt to deal exhaustively with *county distribution*. I have merely, in the case of some of the less-known forms, given within brackets the names of such counties as I knew for them at the time of writing. Already in several instances I could add to these, but abstain from doing so as a rule.

p. 111 (1892). *R. Cariensis* Rip. & Genev.—I have now reason to believe the plant referred to under this name to be rather widely spread in N. Devon. I have also seen it (or a very nearly allied form) in one Dors. locality; but a closer acquaintance with the Somers. plant. mentioned shows it to be different.

p. 112. *R. Dumnoniensis* Bab. — The lts., I find, are not unfrequently quite green and only thinly hairy beneath.

p. 113. *R. nemoralis* P. J. Muell.—There is reason to fear that this has been too hastily adopted as the right name for our old aggregate, "*R. umbrosus* Arrh." Dr. Focke has recently placed *nemoralis* as a subordinate form nearly allied to *R. macrophyllus*, and described it as having "lts. green on both sides, ... inflorescence drawn out, with many flowered branches, large bracts, and falcate prickles; fl. handsome, pink." This will hardly suit our *aggregate*. Probably our best course at present would be to put aside the names *nemoralis* and *umbrosus*, and make *dumosus* our

type, with *pulcherrimus* and *Lindebergii* as closely allied forms or vars.

p. 148. *R. villicaulis* Koehl. — The character, "*concave* l.," though reliable, I believe, as applied generally to this species, is not true of the strongly marked "Midlands *calvatus*," the l. of which are, I am assured, conspicuously convex.

p. 201. The plant referred to as "the *usual ramosus* of the Midlands" is the *R. Mercicus* Bagnall, since described in this Journal (1892, p. 372).

p. 203. *R. thyrsoideus* Wimm. — Quite recently Dr. Focke has thus named a Heref. plant of the Rev. A. Ley's, and I have seen Notts and Linc. specimens, gathered by Mr. H. Fisher, that I should also refer to it. The following is a translation of Dr. Focke's lately published description of this aggregate species:—"Lts. medium-sized, glabrous above, with appressed white felt beneath, unequally and coarsely often incise-serrate; term. narrow when young, later narrowly ovate to broadly elliptic. Inflorescence long, narrow, scarcely narrowed upwards, rather loose, with long branchlets and ped. Fl. showy, white or light pink. Tall handsome plants with striking beautiful pan." The "species" is marked off from *R. pubescens* by its very high-arching glabrous furrowed st. and lts. often incised, and with more closely appressed white felt beneath.

p. 230. *R. Salteri* Bab. — The Aconbury plant gathered by Mr. Ley "in the open" in 1892 has lts. rounder, much thicker, and in some cases even grey-felted beneath.

R. festivus Muell. & Wirtg. — Dr. Focke writes that specimens I sent him of a plant which grows in some quantity on Crowell Hill, Oxon, "match the dried original plants" of this "species," except (so far as he can see) in having white instead of pink pet.—not, I think, a material point of difference, as the pet. of the Crowell plant are not of a *dead* white. By his latest arrangement he places *festivus* after *R. gymnostachys*, distinguishing it only in the following terms:—"Lts. green beneath, as a rule narrower than in *R. gymnostachys*; term. generally obovate. Inflorescence as in the preceding species; rather less hairy. More like *R. Lejeunei* and *R. Fuckelii*." The Crowell plant is, however, much more strongly armed and more glandular than any ordinary *gymnostachys*, while its long pyramidal panicles, though very similar, are broader, and its l. much thinner and greener.

p. 5 (1893). "*R. Bellardi* W. & N.?" — The "?" here is wrongly placed, as it belongs to the name that follows—*R. dentatus* Blox.

R. acutifrons Ley, *Journ. Bot.* 1893, pp. 13, 14. — This newly described and strongly marked plant may be readily distinguished from its ally, *R. viridis*, by the more nearly equal and deflexed stem-prickles, the longer pointed and more variable l., and (above all) by the more interrupted pan. with remarkably aggregated and smaller fl.

R. ochrodermis Ley, *Journ. Bot.* 1893, p. 15.—My knowledge of this is too slight to enable me to form any very decided opinion as

to where in our list it should come. But if I am right in my impression that its place will prove to be with *R. tereticaulis* and *R. oigocladus* (among the BELLARDIANI, Sect. B), it may at once be marked off from those two plants by the more unequal prickles and acicles, the curious ochreous colouring which those organs share with the st., and the almost exclusively 3-nate l. harsh to the touch beneath.

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ALISMA RANUNCULOIDES VAR. *ZOSTERIFOLIUM* FRIES IN BRITAIN.

BY THE REV. E. S. MARSHALL, M.A., F.L.S.

ON August 5th of last year, when botanising along the Beauly river, E. Inverness, opposite the village, I came across a number of small pits full of water, about 1½ to 4 ft. deep, formed by digging out peat or earthy matter. These were occupied by a very remarkable growth, which made me suspect the presence of *Alisma natans* Buchenau, until the discovery of flowers settled the question of specific identity. Having only once gathered var. *repens* (Davies) in W. France, several years ago, I thought that the form might perhaps be a "drowned-out" state of that; but after-study did not favour this view, the habit and manner of flowering being so different. For the most part the plants grew entirely submerged, the root-leaves generally having a small lanceolate or linear-lanceolate blade, but many of them tapering gradually to a point, so as to resemble deep-water forms of *Littorella lacustris*. The most striking peculiarity, however, was the presence of long, arching, subaqueous stems, from which, at intervals of three or four inches, sprang roots bearing linear leaves from 2 to 6 inches long. These floated freely about, but in no case did I find them rooting in the soil, which I suspect that they would only do quite late in the year. In very shallow water, leaves approaching the usual form of ditches were to be met with, but the tendency to throw off these free-floating, plant-bearing stems remained; nor could I find normal *A. ranunculoides* anywhere around. Very few specimens were in flower, and those only at the water's edge; the

inflorescence showing no marked deviation from type, except in the presence of fascicled leaves on most of the panicles, which I believe to be analogous to the leaf-producing submerged rootlets. No fruit was seen, and I suspect that it seldom, if ever, occurs. Specimens from the River Laune, Killorglin, Co. Kerry, collected by Mr. R. W. Scully in August, 1890, and sent out under the name of var. *repens*, appear to me to be the same thing, though less well marked; an opinion endorsed by Mr. Scully himself and by Mr. Arthur Bennett, to whom I owe both the identification of my plant and almost all the information gleaned from books about it. He has looked through the material at Kew and South Kensington without finding anything similar to those above named, and, from an examination of Davies' specimens of his *A. repens*, concludes that the two forms should be kept separate. This appears to be rare, being only known hitherto from a few localities in Sweden, Denmark, Pomerania, and Holland. All the Floras that mention it treat it as a "good" variety; but whether it is really more than an extreme "state" can only be proved by experiment.

The first publication by Fries was in *Botaniska Notiser* for 1840, p. 35. In *Nov. Fl. Suec. Mant.* iii. p. 183, written two years later, ignoring his previous name, the author substituted that of *sparganifolium*, possibly considering it more appropriate. The earlier title must, of course, stand. He says:—"*sparganifolium*, foliis prælongis natantibus linearibus membranaceis. *Bot. Not.* 1840. In Œlandiæ australis aquis *G. M. Sjöstrand*. Exacte respondet *A. Plantagini graminifolio*. Utriusque folia sunt phyllodia, in quorum apice laminam parvam abortivam videre licet." The original description runs:—"foliis longissimis linearibus natantibus (från Öland, Sjöstrand)." The following list (due to the source already mentioned) illustrates the book-history of the subject:—

1753. *Alisma ranunculoides* L. *Spec. Plant.* ed. i. vol. p. 343.
1840. var. *zosterifolium* Fries in *Bot. Not.* p. 35.
1842. var. *sparganifolium* Fries, *Mant.* iii. p. 183.
1844. *zosterifolium* Fries *in litt.*, Koch *Synopsis Fl. Germ. et Helv.*
1846. Fries *Summa Veg. Scand.* p. 65.
1864. γ. *littorellæfolium* Mortensen in Lange's *Handb. i den Danske Flora*, ed. 3, p. 795.
1868. *Echinodorus ranunculoides* G. Engelmann in Ascherson *Flora d. Prov. Brandenburg*, p. 651 (1864), var. *foliis zosteraceis* Buchenau. *Abhandl. d. naturw. Vereines zu Bremen*, xi. p. 17 (reprint).
1869. var. *sparganifolium* Fries. Marsson *Flora von Neu-vorpommern*, p. 446.
1879. *v. zosteræfolia Fr. i. Bot. Not.* 1840, Hartman *Skand. Flora*, ed. xi. p. 416.

Mo. Bot. Garden.
1894

AJUGA PYRAMIDALIS IN SCOTLAND.

By Arthur Bennett, F.L.S.

In last year's *Journal*, p. 310, Mr. Colgan asks under what conditions, and at what elevations, the above species occurs in Scotland. As no one has replied to his query, I offer the following notes. In compiling them I am much indebted to Messrs. Miller and Duncan for notes on the species in the Hebrides and Sutherland.

Taking the counties in which it occurs, and in which the habitats are so stated as to be available :—In Orkney it occurs at about 600 ft., "on the sides of a hill." In the Outer Hebrides it grows among short grass about 100 ft. above sea-level on ground moderately dry. Another station is on the S.E. slope of one of the hills that occupy the peninsula at the S.W. corner of Harris, about 350 ft. above sea-level, on roughish, moderately dry ground, among short grass, and small tufts of heather.

In Caithness it grows on "The Old"; this is about 1250 ft. altitude, but I can find no note of the exact position of the plant on this hill. It also occurs on the grassy ledges of the cliffs on the north coast (about 300 ft.), and on the sloping banks (among grass) of one or two of the rivers at a low elevation (70′–100′ ?). In E. Sutherland, on the sloping and rocky banks of a small burn near the coast; and again on the sides of the "Straths" on the east side of the watershed, bordering on the Caithness border. In W. Sutherland, about a mile inland, among rocks partly overshadowed by brushwood, about 2–300 ft. above sea-level; and in a grassy dell on the inland side of the sea-cliffs facing west, probably from 3–400 ft. altitude. In Dumfries, "on a small grassy plat formed by a slip in the rocky sides of the glen, at an elevation of about 1750 ft." (J. T. Johnstone) in the Moffat district.

Sir J. E. Smith describes its stations as "in dry pastures in the Highlands"; Hooker and Arnott as "Highland pastures." Mr. Bentham remarks (ed. 1), "It is never more marked than in recently burnt pastures"; this is the case in Sutherland, except that heather predominates over grass.

Looking beyond our own country, in Norway it extends upwards from 3500′, 4000′, and 5000′. Sommerfelt, in his *Suppl. Fl. Lapponia* gives "in graminosis humidis inferalpinum." In Denmark, at a low elevation in the island of Bornholm, &c. ("in high grassy places"). In Belgium, in the glades of woods, pastures and heaths. In Italy, "in alpine pastures in the Alps."

In cultivation (from Sutherland) it often shows for flower in the end of March, and in early seasons is in full flower by the end of April, continning to the beginning of June.

Ajuga pyramidalis seems to be generally described as perennial, but it is often biennial, becoming perennial by buds in the lower axils of the leaves, which sometimes become very short stolons in the end of autumn. Last September Mr. Duncan sent me two

small plants that at the time puzzled me greatly as to what they could be, but growing on, they now show they are the *Ajuga*; the present leaves are curiously folded with patent hairs almost touching each other, looking much like a trap. Mr. Watson (*Cyb. Brit*, ii. 351) says: "Maintains itself by seeds in my garden in Surrey, but rather as a biennial than perennial."

LABORATORY NOTES.

By Spencer Le M. Moore, B.Sc., F.L.S.

I. The best way to make Millon's reagent.

The usual method of making Millon's reagent is that given by the text-books on physiology. The inconvenience in following the directions contained in those books is great, seeing that not only are nitrous fumes liberated in large quantity, much loss of time being caused before the fluid is ready, but the process is not feasible, supposing only a little of the reagent to be required. Seeing that Millon's fluid is well known as being a mixture of mercuric and mercurous nitrates, it would seem to be a matter for surprise if no attempt has been made to form a Millon's fluid by simply mixing the above nitrates in a certain proportion. As I have never heard of such an attempt, it may perhaps be worth mention that for some time I have used a Millon's reagent made by mixing the nitrates. Some preliminary experiments showed that a saturated solution of mercurous nitrate added to an equal quantity of mercuric nitrate as ordinarily sold, gives a fluid behaving in every way like one got by the action of hydric nitrate upon mercury. The advantages of this practice are that time is saved, there is no unpleasant smell caused, and just as much or as little of the reagent can be made—if it be only a few drops—as the operator requires.

II. A new way of demonstrating continuity of protoplasm.

Within the last three years I have had much occasion to use Millon's fluid in connection with researches on callus and paracallus, and on the chemical constitution of cell-walls. Having frequently noticed that by careful boiling of sections mounted in Millon's fluid continuity of the slime through the sieves of sieve-tubes can often be made out in a beautiful manner, it occurred to me to try whether the fluid would be of any service in the demonstration of continuity through cell-walls in general. With ordinary tissues the result was not satisfactory, apparently because the boiling fluid acts too energetically upon the walls, but in the case of bony endosperms the reagent acts admirably if the precaution be taken of carefully applying heat to the preparation, when, in the course of a few seconds the intramural threads are well shown up. Preparations so treated may, after thorough washing, be mounted in glycerine, and they will keep for years. When it is

remembered that, except very rarely (e. g., *Strychnos Ignatia*), the ordinary methods employed to demonstrate continuity involve action of the reagent during several hours, the advantage of the plan here proposed is at once obvious.

III. Action of cold Millon's fluid on iron-greening tannin, and on cell-walls giving proteid reactions.

In a memoir recently published in *Journ. Linn. Soc.* vol. xxvii. I have endeavoured to show that the substance in certain cell-walls which causes them to give several of the reactions whereby proteids are recognised is not protein, as some continental authors (notably Weisner and Krasser) suppose, but is an iron-greening tannin. I was led to take up this position by the accumulation of evidence from several quarters; for not only did it appear that the cell-walls which will give some proteid reactions will not give others as distinctive, but the presence of iron-greening tannin could be demonstrated in those very walls. Moreover, it was found that solutions of iron-greening tannin behave exactly as do the walls to the various reagents employed, whether those reagents be reagents used in the detection of proteids, or reagents enabling us to discover tannin. Further, an attempt was made to explain why it is that certain cell-walls will take a distinctive colour with a given reagent, such as Schulze's solution, and some evidence was tendered in favour of the view that the presence of tannin (or at least of some glucoeide) often determines the colour taken in these cases.

As I am here writing about Millon's reagent, the opportunity is taken of stating that, in the course of some further researches on this interesting subject, an unsuspected confirmation of the above doctrine has lately come to light. I find that whereas when Millon's fluid is added to a solution of tannin, no change in the yellow ochre-coloured precipitate * ensues on allowing the unboiled product to stand overnight, yet that with an iron-greening tannin in the form of a solution of catechu, the result is quite different, since the precipitate *slowly becomes brick-red without boiling*. Here then is a crucial test which anyone who still favours continental views can easily apply. If the substance in the cell-walls which react like proteids be really protein, those walls should be unstained after lying overnight in cold Millon's fluid; on the other hand, staining of these walls would be evidence of a very decided character in support of the deduction advanced in my memoir.

The result of the experiments is here given: in each case sections were kept overnight in Millon's fluid, but usually three or four hours' action is quite sufficient.

(*a*). *Ivy.* Xylem, hard bast and to a less degree outer cortical layers and epidermis stained as on boiling in the fluid. The stain also seen well in the sclerotised fundamental tissue lying upon the inner side of the xylem.

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* If the solution be a strong one, the precipitate is at first orange, but it soon becomes ochre-coloured.

(*b*). *Escallonia macrantha*. Xylem and hard bast well stained.

(*c*). *Juncus conglomeratus*. Xylem and sclerotised fundamental tissue surrounding vascular bundles well stained; walls of phloem less clearly stained.

(*d*). *Yellow Jasmine*. Walls of xylem, hard bast, phelloderm, and to a slighter degree of soft bast stained; sclerotic fibres running through cortex also well-stained.

(*e*). *Privet*. Xylem and hard bast stained.

(*f*). *Pyrethrum Parthenium*. Xylem and hard bast stained.

(*g*). *Berberis Darwinii*. Xylem and hard bast stained.

(*h*). *Maize*. Walls of xylem and especially those of the sclerotised fundamental tissue in the neighbourhood of the vascular bundles stained.

(*i*). Rhizome of *Arundo Phragmites*. Same as maize.

(*j*). *Veronica* sp. Hard bast and xylem stained.

(*k*). *Isoëtes lacustris*. Meristem walls stained.

It must suffice to remark *that these stained walls are precisely the walls which give the proteid reaction with boiling Millon's fluid*. Moreover, iron-greening tannin in the cells of these plants, when it could be detected, reacted in the same way as did the walls to the cold fluid.

A PROVISIONAL LIST OF THE MARINE ALGÆ OF THE CAPE OF GOOD HOPE.

By Ethel S. Barton.

I.—PROTOPHYCEÆ.

Lyngbya semiplena J. Ag. Sea Point, *Boodle*! A small specimen on *Codium tomentosum*.

Geogr. Distr. North Sea. Adriatic.

Calothrix crustacea J. Ag. Kalk Bay, *Boodle*!

Geogr. Distr. Adriatic.

Dermocarpa prasina Born. On *Rhizoclonium*, Knysna, *Boodle*! On *Cladophora rupestris*, Cape, *Harvey*!

Geogr. Distr. North Sea. Adriatic.

II.—CHLOROPHYCEÆ.

Ulveæ.

Ulva Lactuca L. Robben Island, *Tyson*! Kalk Bay, *Boodle*! Knysna, *Krauss*! Port Elizabeth, *Sutherland*! Port Natal, *Krauss*! No. 274; *Gueinzius*! Cape, *Hohenack.*! Meeralgen, No. 490; *Reliquiæ Brebissonianæ*! Ser. 2, No. 206.

Var. rigida. Kalk Bay, *E. Young*! Knysna, *Boodle*! Cape, *Hb. Lenormand*!

Geogr. Distr. N. Atlantic. North Sea, Mediterranean, West Indies.

U. fasciata Delile. Cape Point, *Boodle*! Kalk Bay, *Boodle*! Kei Mouth, *Flanagan*! Cape, *Reliquiæ Brebissonianæ*! Ser. 2, No. 107.

Geogr. Distr. General in warm seas.

U. UNCIALIS Suhr. Robben Island, *Boodle*! *Wenek*! Table Bay, *Drege*! *Areschoug*, *Tyson*! Cape Agulhas, *Hohenack.*! Cape, *Areschoug*, Phyc. extraeurop. exsicc. No. 59; *Hohenack.*! No. 153; *Dickie*! *Reeve*!

ENTEROMORPHA COMPRESSA Kütz. Table Bay, *Ecklon*! Sea Point, *Tyson*! Knysna, *Krauss.*

Geogr. Distr. General.

E. FLEXUOSA J. Ag. Cape, *fide De Toni.*

Geogr. Distr. Atlantic. Pacific. Baltic. Mediterranean.

E. BULBOSA Kütz. Robben Island. Table Bay, *Drege.* Sea Point, Cape Point, Kalk Bay, Knysna, *Boodle*!

Geogr. Distr. Southern oceans.

E. LINZA J. Ag. Cape, *Drege*!

Geogr. Distr. N. Atlantic. Baltic. Mediterranean. W. Indies. Tasmania.

E. INTESTINALIS Link. Cape Agulhas, *Hohenack.*! Cape, *Drege*! *Brand*!

Geogr. Distr. Atlantic. Mediterranean. W. Indies.

E. CLATHRATA Roth. Mouth of Olifants River, *Drege.* Algoa Bay, *Sutherland*!

Geogr. Distr. N. Atlantic. North Sea. West Indies. Tasmania. New Zealand.

LETTERSTEDTIA INSIGNIS Aresch. Port Natal, *fide Areschoug.*

PRINGSHEIMIA SCUTATA Rke. On *Placophora Binderi* J. Ag., an epiphyte on *Codium tomentosum.* Kei Mouth, *Flanagan*!

Geogr. Distr. Baltic. Scotland.

CONFERVEÆ.

CHÆTOMORPHA CLAVATA Kütz. Table Bay, False Bay to Algoa, *fide Areschoug.* Cape Point, *Boodle*! Sea Point, *Boodle*! Table Bay, *Harvey*!

Geogr. Distr. West Indies.

C. LINUM Kütz. Port Natal, *Krauss.*

Geogr. Distr. North Sea. Baltic. Mediterranean. North Atlantic. Red Sea.

C. NATALENSIS Hering. Port Natal, *Krauss.*

C. CRASSA Kütz. Kei Mouth, *Flanagan*!

Geogr. Distr. Adriatic. Ireland.

C. ÆREA Kütz. Kalk Bay, *Boodle*!

Geogr. Distr. Mediterranean, Atlantic shores of Europe, Canaries, United States, W. Indies, Australia.

RHIZOCLONIUM RIPARIUM Harv. Knysna, *Krauss.*

Geogr. Distr. North Sea. Baltic. Adriatic. Atlantic. Indian Ocean.

R. ARENOSUM Kütz. Cape, *Hb. Dickie*!

Geogr. Distr. British shores. Arctic ocean.

R. TORTUOSUM Kütz. Knysna, *Boodle*!

Geogr. Distr. North Sea.

CLADOPHORA NUDA Kütz. Cape Agulhas, *Hohenack.*! Meeralgen, No. 464. This specimen is so fragmentary that it is quite impossible to examine it satisfactorily, and I therefore take Hohenacker's naming on trust.

Geogr. Distr. Atlantic.

C. MEDITERRANEA Kütz. Cape Agulhas, *Hohenack.*! Meeralgen, No. 466.

Geogr. Distr. Mediterranean.

C. SPINULOSA Kütz. Cape Agulhas, *Hohenack.*! Meeralgen, No. 351.

Geogr. Distr. Mediterranean.

C. GLOMERATA Kütz. Port Natal, *Krauss.*

Geogr. Distr. General.

C. AFRA Kütz. Knysna, *Krauss.*

Geogr. Distr. Mauritius.

C. HOSPITA Kütz. Robben Island, *Tyson*! Table Bay, *Ecklon, Harvey*! Green Point, *Harvey*! Cape Point, *Boodle*! Cape Agulhas, *Hohenack.*! Knysna, *Krauss.* Cape, *Gaudichaud, Drege*! *Areschoug*, Phyc. extraeurop. exsicc. No. 60; *Hb. Dickie*! *Harvey*! *Hb. Lenormand*! *Hb. Wenek*! *Reeve*! *Hohenack.*! Meeralgen, Nos. 53, 204.

C. CATENIFERA Kütz. Table Bay, *Harvey*! *Boodle*! Kalk Bay, *Boodle*! Cape, *Hb. Lenormand*! *Reliquiæ Brebissonianæ*! Ser. 2, No. 124.

C. FLAGELLIFORMIS Kütz. (? includes *C. virgata* Kütz.). Olifants River to Algoa Bay, *Binder.* Robben Island, *Boodle*! Table Bay, *Drege*! *Krauss, Menzies*! *Harvey*! Kalk Bay and Cape Point, *Boodle*! Knysna, *Krauss.* Cape, issued in Brebisson's *Algues de France*! Ser. 2, No. 98; *Hohenack*! Meeralgen, No. 152; *Hb. Wenek*!

C. RUPESTRIS Kütz. Cape, *Brand*! *Harvey*! *Scott Elliot*!

Geogr. Distr. Atlantic. Baltic.

C. TRICHOTOMA Kütz. Between Omsamculo and Omcomas, *Drege.* This is the only record of this alga from the Cape that I can find. In the Herbarium of the British Museum there is a specimen named "Conf. trichotoma, Cap. B. Spei. Herb. Roem.," which is clearly *Cladophora hospita* Kütz.; and as, with the exception of Mazé's Guadeloupe specimen, all other records of *C. trichotoma* are European, I am inclined to think that Drege's specimen was simply *C. hospita* Kütz.

Geogr. Distr. North Sea. Adriatic. W. Indies.

C. ECKLONI Kütz. Table Bay, *Ecklon, Drege*! Robben Island, *Wenek*! Cape Agulhas, *Hohenack*! Meeralgen, No. 463. Cape, *Hb. Dickie*! *Reeve*! *Harvey*!

Geogr. Distr. W. Indies.

C. VIRGATA Kütz. Table Bay, *Binder.*

Spec. dubia.

C. CAPENSIS Ag. Cape, *fide Areschoug* (Phyc. cap. p. 13). ("Num Lychæte Ecklonii?").

C. ACULEATA S. Algoa Bay, *Ecklon*.

C. RADIOSA S. Algoa Bay, mouth of Zwadtkap. *Ecklon*.

SIPHONEÆ.

MICRODICTYON UMBILICATUM Zanard. Port Natal, *Krauss*.

Geogr. Distr. Atlantic. Pacific. Mediterranean. Red Sea.

APJOHNIA RUGULOSA G. Murr. Port Alfred, *Carr*! Kei Mouth, *Flanagan*! Algoa Bay, *Becker*! Cape, *Harvey*! Natal, *Krauss*! Sub nomine *Conferva proliferæ* Roth.

Geogr. Distr. Japan.

CHAMÆDORIS ANNULATA Mont. Table Bay, *fide Areschoug*. Port Natal, *Krauss*!

Geogr. Distr. Brazil. Indian Ocean. W. Indies.

(To be continued.)

SHORT NOTES.

ARCTIUM INTERMEDIUM IN WORCESTERSHIRE. — I met with one plant of this species on the bank of the Severn, near the Ketch, between Worcester and Kempsey, on August 7th, 1890. So far as I can ascertain, it has not been recorded for this county before.—R. F. TOWNDROW.

HYBRID ORCHIS. — I notice on p. 382 of last year's Journal that you would like to know whether I found more than one specimen of the natural hybrid *Habenari-orchis viridi-maculata*. I only found one specimen, which I removed at the time to what was formerly a wild garden at Longwitton, with the hope that it so might be preserved; I did not, however, see that it had come up last year, as I was not there at the right time. The spotted and frog orchises are both fairly abundant in the hay-field in which I found the hybrid, so that there must be plenty of opportunities for cross-fertilisation, and it seems strange that it should not oftener occur. —CECIL H. SP. PERCIVAL.

VALERIANELLA CARINATA IN EAST KENT. — My friend Mr. F. Smith sent me this plant a few months ago from Boughton Quarries, Linton, near Maidstone, where he has noticed it growing for several years. *Atropa Belladonna* occurs in the same quarries. Mr. Arthur Bennett has seen specimens.—ERNEST S. SALMON.

FESTUCA SYLVATICA Vill. IN CO. CORK. — During the summer of 1891, I found this handsome grass growing in a rocky wood overhanging the Glanmire estuary, about three miles east of Cork. Though this wood forms part of a private demesne, I think the plant has as much claim to be considered native as it has either near the Upper Lake, Killarney, or along the rocky bankside of the R. Feale, Listowel—all three localities being very similar. This is an addition to the Flora of Cork.—R. W. SCULLY.

NOTICES OF BOOKS.

Fossil Plants as Tests of Climate: being the Sedgwick Prize Essay for the year 1892. By A. C. Seward, M.A., F.G.S. London: C. J. Clay & Sons. 1892. 8vo, pp. xii. 151. Price 5s.

In this Essay Mr. Seward has undertaken the examination of a large and important question, and if his conclusions are less definite than could be wished, it is due rather to the state of existing knowledge than to a want of industry on his part. The subject being a wide one, he has restricted himself in the main to the task of bringing together such botanical and geological facts as are at present available for its discussion, and of calling attention to the several points of view from which previous writers have considered the subject. This will explain to the reader why the author has indulged so largely in quotation, and why, independent criticism, though not entirely absent, is not a prominent feature of the essay.

In a somewhat lengthy historical sketch, Mr. Seward traces the growth of such theories or opinions as have been formulated with regard to the connection between fossil plants and climatic changes in the past history of the earth. This is followed by brief accounts of plant distribution, and the life of plants at low temperatures, with special reference to Arctic vegetation. We then come to what we regard as one of the most important chapters in the whole essay, *viz.*, that on "the influence of external conditions upon the macroscopic and microscopic structures of plants." Everyone allows that if plants are to be used as tests of climate in all possible ways, we ought to know to what extent it is possible to infer climatic conditions from morphological and histological details. Unfortunately, however, in spite of all that has been done in the way of distinguishing the floras of different climates in these respects, we are still far from such definite and constant relations between structure and climate as will enable us to pass with confidence from one to the other. The facts as they stand are fairly well summarised by the author, but they show most clearly that much experimental research will be required before we can use plant-structure as a guide to climate. In dealing with this part of his subject, Mr. Seward takes up one or two positions which we think will hardly be accepted by modern botanists. At the opening of the chapter it is stated that "plants with woody stems are able to live through the winter of the cold temperate zones, *because* the lignification of part of the plant tissues is followed by a development of cork, *a screen against cold*." The italics are ours. Here he appears to have mistaken a condition for a cause, and to take a view of the function of cork not held by plant physiologists generally. A few sentences further on, reference is made to the woody plants of the tropics, and we read that "there, the wood is not a safeguard against the influence of cold, but serves to give the plants that firmness which they require to enable them to support their branches. In a tropical climate, cork must be looked upon, *not as a screen from cold* (italics ours), but as

a regulator of transpiration, of which it prevents excess." We venture to think that this statement is as correct for cold temperate plants as for tropical ones, and that neither wood nor cork is a special adaptation against cold.

In dealing with the possibility of using the structure of fossil plants as a guide to climate, the author gives most attention to those of the Carboniferous Period, and concludes that "we cannot as yet learn many lessons in Climatology from the structure of stems, roots, and other parts of fossil plants," In this we fully agree. Thanks to the researches of Carruthers, Williamson, and their continental co-workers, the minute structure of some of the best known types has been worked out with considerable detail, but this merely gives us some idea of the nature of the habitat, and throws little light on that of climate. In considering the case of *Lepidodendron*, Mr. Seward follows what is a common practice, and speaks of the vascular tissue as "wood." We would suggest that the time has arrived when a reform of this terminology is urgently needed, especially if we are to employ the structure of the fossil in the diagnosis of climate. As applied to Dicotyledons, the term "wood" represents neither a histological nor a physiological unity, but a mass of tracheids, fibres and cells, subserving the functions of conduction, mechanical support, and storage of elaborated food-stuffs. But in *Lepidodendron*, and several other Carboniferous plants, a corresponding complex of tissues is not met with. Here both the primary and secondary xylem are purely vascular, and contain no sclerenchymatous elements whatever, the mechanical function being performed by a zone of sclerenchyma which runs in the cortex near the periphery of the stem. Hence in these plants the term "wood" is as applicable to the mechanical as to the vascular tissue, but in either case does not mean the same thing as in Dicotyledons. If this were borne in mind we should not hear so much about the "comparatively feeble development of wood" in *Lepidodendron*, seeing that the mechanical tissue is often well developed, even in stems where the monostelic axis is unaccompanied by a zone of secondary xylem. Curiously enough, Mr. Seward describes this sclerenchyma as cork, overlooking the facts that it lies *entirely within the generating layer*, which produces it centrifugally, and that the tissues outside it appear to retain their power of growth even when it has attained considerable thickness.

Passing over the next two chapters on "Annual Rings in Recent and Fossil Plants" and "Arctic Fossil Plants" respectively, we have another excellent chapter on the Climate of the Carboniferous Period as indicated by other characteristics of the vegetation than those of structure. Here the evidence which has rendered untenable the old ideas of a tropical climate, with an atmosphere laden with moisture and carbon dioxide, is well set out, and special prominence is given to the views of the late Dr. Neumayer, of Vienna. There is nothing, however, which calls for special comment or criticism, and the same may be said of the closing chapter on the plants of the Pleiocene.

THOMAS HICK.

Les Algues de P. K. A. Schousboe. Par Édouard Bornet (Masson, Paris, 1892). Extr. des Mem. de la Soc. Nat. Sc. Nat. et Math. de Cherbourg, t. xxviii. 1892, pp. 216, 3 tab.

Students of Algæ will cordially welcome this volume by M. Bornet, giving an account of the Algæ collected in Morocco and the Mediterranean (1815-1829) by Peter Schousboe, who was Danish Consul at Morocco for some thirty years. Those who possess the valuable sets of *Algæ Schousboeanæ* will be especially glad of this critical work. It is prefaced by a very suggestive, brief essay on the affinities of the marine flora of this region; but the feature of particular value is contained in the notes on the species. Their critical value is beyond estimation in this short note. It is scarcely necessary to add that the copper-plates are illustrations of the kind one sees only too seldom.

G. M.

Les Lichens: Étude sur l'anatomie, la physiologie et la morphologie de l'organisme lichénique. Par A. Acloque. Paris: Baillière et fils. 1893. Pp. viii. 376, fig. 82. 3 *fr.* 50.

This is one of the last additions to the *Bibliothèque Scientifique Contemporaine*, of which some hundred volumes have already appeared. The type is large and clear, and commendably free from misprints. The illustrations are woodcuts intercalated in the letterpress. While approving of the way in which the publishers have got the book up, we feel it our duty to express our dissatisfaction with them for dating the title-page "1893," since the book was in the hands of the public in November, 1892.

Upon opening the book we were much surprised to see the following passage:—"Le nostoch n'est pas un lichen parfait, et même, pour un grand nombre de savants, il constitue une algue." We have always accepted without question the view of the majority as to the algoid nature of *Nostoc*, and being lamentably ignorant of the existence of a minority imaginative enough to conceive the possibility of its being anything but an alga, we determined to search for further particulars. The result of our search is that we find M. Acloque to be disinclined to entertain the theory of Schwendener and the "hétérogonidistes," who hold that a lichen is a symbiotic union of a fungus and an alga. He has indeed a decided bias in favour of "homœogonidisme" (the theory that the gonidia are of essentially the same nature as the hyphæ), but is not entirely satisfied with it. So he offers us an intermediate hypothesis, in which he endeavours to reconcile the two opposed theories. We have not space for giving his hypothesis in full. Suffice it to say that in M. Acloque's opinion the two elements of a lichen develop themselves separately at first, giving rise to distinct states, imperfect so long as they remain isolated. *Nostoc* is an instance of the purely gonidial state, capable of indefinite growth as *Nostoc*, but incapable of generating hyphæ and of becoming a completely developed lichen. It must wait, as it were, until some matrimonially inclined hypha or spore comes along and offers to set up housekeeping with it; and then things just hum around, as the

Americans say. The purely hyphal state, on the other hand, is at present unknown; but, supposing it to exist, should it fail to meet with a suitable gonidial thallus, it would be capable of generating the necessary gonidia, and of arriving at the complete lichen state. We must refer those who are interested in the subject to the book itself, as we are unable to do justice to the hypothesis here.

Leaving the theoretical part, we can strongly recommend the practical portion of the work. Chapters III., IV., and V., for instance, deal with the anatomy of Lichens, and are fully explanatory of the difficult terminology employed for distinguishing the parts and innumerable states of these variable plants, and put the whole matter into clear and popular language. Succeeding chapters treat of the functions of nutrition and reproduction, of the economic uses, and of the principal systems of classification. M. Acloque does not mention the curious genus *Ephebe*. Perhaps he hands it over to the algologists in exchange for *Nostoc*.

A. G.

ARTICLES IN JOURNALS.

Ann. Scottish Nat. Hist. (Jan.). — E. S. Marshall, 'Scottish Willows.' — G. C. Druce, '*Alchemilla vulgaris*.' — J. W. H. Trail, '*Peziza ammophila*.'

Bot. Centralblatt. (Nos. 1–4). — G. Holle, 'Zur Anatomie der Saxifragaceen und deren systematische Verwerthung.'

Bot. Magazine (Tokio).—(Dec. 10). *Eugenia cleyeræfolia* Yatabe, sp. n.

Bot. Zeitung (Dec. 23, 30).—H. Rehsteiner, 'Zur Entwicklungsgeschichte der Fruchtkörper einiger Gastromyceten.'

Bull. Torrey Bot. Club (Dec.).—J. K. Small, 'List of American species of *Polygonum*' (*P. Pringlei* Small, *P. phytolaccæfolium* Meissn., spp. nn.). — N. L. Britton, Rusby's S. American plants (contd.).—L. H. Pammel, 'Phænological Notes.'

Gardeners' Chronicle (Jan. 7). — 'Pitcher-plants and Frankincense.'—(Jan. 14). J. G. Baker, 'Synopsis of *Canna*.'—(Jan. 21). *Kniphofia Tuckii* Hort-Leichtlin, sp. n.

Journal de Botanique (Jan. 1, 16). — L. Guignard, 'Sur le développement de la graine et en particulier du tégument séminal.' —(Jan. 16). J. Vesque, 'La tribu des Clusieés' (contd.).

Oesterr. Bot. Zeitschrift (Jan.). — A. Kerner, 'Die Nebenblätter der *Lonicera Etrusca*' (1 plate).—J. Lütkemüller, 'Beobachtungen über die Chlorophyllkörfer einiger Desmidiaceen' (1 plate). — P. Ascherson, '*Sparganium neglectum* und sein Vorkommen in Oesterreich-Ungarn.' — F. Krasser, 'Kleinere Arbeiten des pflanzenphysiologischen Institutes der Wiener Universität.'—E. v. Halácsy 'Zur Flora der Balkanhalbinsel' (concl.).

BOOK-NOTES, NEWS, &c.

Dr. Bretschneider, whose work in connection with the history of Chinese Botany has several times been referred to in this Journal, has published the second part of his *Botanicon Sinicum* (Shanghai: Kelly & Walsh). This is devoted to the Botany of the Chinese Classics, and is enriched with annotations and an appendix by Dr. Grush Faber. The subject is one with which only those possessing special knowledge are competent to deal; and as, to our regret, we are not among these favoured few, we must content ourselves with calling the attention of those interested to the work. From our knowledge of Dr. Bretschneider's previous undertakings, we have no hesitation in saying that this volume is a valuable contribution to the History of Botany in China.

The sixth part of Prof. Macoun's cheap and useful *Catalogue of Canadian Plants* (Montreal, 1892; pp. viii. 295; 25 cents) enumerates the Mosses. It includes 128 genera and 953 species. Of these latter upwards of 160 are described for the first time, and there are more than 70 others of which the descriptions have been recently published. Thus about one quarter of the whole total are new to science. This is, without doubt, too liberal a proportion; and as time goes on many of these new species will be sunk, and the list condensed. The task of naming and classifying has been undertaken by Prof. Kindberg, of Linkoeping, in Sweden. The collections upon which the catalogue is based are principally those made by Prof. Macoun in his numerous travels about Canada during a period of thirty-one years. All species recorded from Greenland, Alaska, and Newfoundland are included.

In the *Transactions of the Eastbourne Natural History Society* for 1891–92, there is a paper by the Rev. W. A. Bathurst, who gives an account of "the first real climb when rope and axes were called into requisition that [he] ever took" in Switzerland. The article is noteworthy for its extraordinary misprints and—we are afraid we must add—for the slight acquaintance with Swiss plants that it displays. Mr. Bathurst speaks of "that wide class of trifolium, oxytropis, or astragalus, which are characterized by pea-like flowers and often veitch-like [*sic*] form"; of "Arnica Montana, . . . scarcely to be distinguished from Hieraceum, another class of plants with handsome composite flowers"; of "Sacifrage," "Eritrichium nonam," "the tube rose of our hothouses," and other curious things. But what calls for our chief censure is Mr. Bathurst's announcement that he imported plants of *Linnæa* from "Pontorsina in the Engadine," and "set roots of it in many places" in a forest near the Saas Valley. "Call it vandalism if you like," he says; and even without his permission this is the word we should have used, unless some stronger expression had suggested itself. The almost entire absence of anything bearing upon local natural history is the chief feature of these Transactions.

The first number of *Erythea*, the new "West American and general" botanical journal, contains two papers by the Editor, Mr.

W. L. Jepson, and two by Mr. E. L. Greene. The latter writer still finds room for criticism in the irregular proceedings of his fellow scientists, even those who are "governed by principle rather than by time-honoured bad precedent in the matter of nomenclature." It appears that among these excellent folk there is a lack of care as to dates of publication, and this, as Mr. Greene says, "is really important." *Erythea* is not to replace *Pittonia*, but the latter "will be likely to appear at longer intervals." The last editorial note foreshadows a new crusade, against "barbarous and ugly" and "uncouth personal" names.

The first number of the *Orchid Review*, viewed from a botanical standpoint, is distinctly disappointing. No editor's name is given, and we understand that Mr. Rolfe, who was to have occupied that position, is unable to fill it, so that we have now no guarantee of the scientific value of the new venture. As an addition to the large number of horticultural journals already in existence, the *Orchid Review* may have its value, but on this point we do not feel competent to express an opinion. It is well printed; but the illustrations, which are to form "a special feature of the work," are by no means satisfactory.

Dr. Vasey's *Grasses of the Pacific Slope, including Alaska and the adjacent islands* (issued Oct. 1892), forms Bulletin No. 13 of the Division of Botany of the U. S. Department of Agriculture. It contains plates and descriptions of the grasses of California, Oregon, Washington, and the North-western Coast. These, which, in our present knowledge, number nearly 200 species, are, Dr. Vasey tells us, all specifically distinct from those found east of the Mississippi River, and also mainly distinct from those of the plains and desert, except in that part of California which partakes of the desert flora. Many of the grasses of the mountain regions of California, Oregon, and Washington reappear in the mountains of Idaho, Montana, and the interior Rockies. The dry interior of California, verging southwards into the desert, is poor in grasses, especially those forming a turf. In this, the first part of the enumeration, are figured and described the species most conspicuous in size and apparent utility, so the work will be of value not only to botanists, but "to all interested in agriculture and the raising of domestic animals." Dr. Vasey's assistant, Prof. L. H. Dewey, is responsible for most of the descriptions. There are 50 plates, including figures of 52 species and varieties illustrative of 15 genera, the series of *Alopecurus*, *Calamagrostis*, and *Stipa* being the most complete. The descriptions are concise and seem accurate, and measurements of the parts are freely given. The plates are well drawn and well lithographed, though a little crowded in the case of some of the larger species; and this brings us to the one great mistake in the work, the wretched allowance of margin to the plates, which drives the larger ones almost off the sheet. The size of the book is, indeed, unwieldy; had it been broader, it would have allowed a better arrangement of the plates. The dissections are often first-rate; here and there they might perhaps be a little

more extensive. Taken as a whole, the work is excellent, and shows how useful a Department of Agriculture may be; we congratulate and envy our American cousins.

We regret to announce the death of Dr. Benjamin Carrington, which took place at Brighton on the 18th of January. We hope to publish an account of the deceased hepaticologist from the pen of his friend, Mr. W. H. Pearson, in our next issue.

The Herbarium of Mr. William M. Canby has been purchased by the College of Pharmacy of New York, and will be placed in their new building, now in course of construction. Mr. Canby's Herbarium has been in course of formation during the last thirty years, and is very rich in American collections. An account of the Herbarium by Prof. Rusby is given in the *Bulletin of the Torrey Club* for November last.

The thirteenth volume (1892) of the *Proceedings of the Dorset Natural History Society* contains two botanical papers—one by the President, Mr. J. C. Mansel-Pleydell, on *Lamprothamnus alopecuroides*, and the other by Mr. Arthur Lister on Mycetozoa; each is illustrated by a plate. We are glad to learn that the new edition of Mr. Mansel-Pleydell's *Flora of Dorset* is on the eve of completion.

We are always glad to allow the reprint of papers published in this Journal, when the ordinary courtesy of asking permission is observed, or a suitable acknowledgment made. A recent appropriation of several pages, without such permission or acknowledgment, calls for a protest on our part. This in no way interferes with the privileges hitherto extended to such as desire them, but it may perhaps serve as a check upon those who ignore the usual amenities of journalism.

OBITUARY.

When the death, on the 30th of November last, of that distinguished biblical scholar the Rev. Fenton John Anthony Hort, late Lady Margaret Professor of Divinity, was announced, few probably remembered that forty years ago he might have been styled one of the rising hopes of the Cambridge school of botanists.

Fenton John Anthony Hort was born apparently in 1828, and proceeded in due course to Trinity College, Cambridge, from which most of his botanical notes are dated. In the 2nd vol. of the *Phytologist* (pp. 1047–9) appear a 'Notice of a few plants growing at Weston-super-Mare' and a 'Note on *Centaurea nigra* var. *radiata* and *C. nigrescens*,' both bearing date November 5th, 1847, when the young undergraduate was not yet twenty; and in the 3rd vol. (pp. 321–2) is a 'Note on *Alsine rubra* var. *media* Bab.,' dated "Torquay, Sept. 27th, 1848." In the 1st vol. of Henfrey's *Botanical Gazette* (1849), pp. 197, 200, he has a paper 'On *Viola sylvatica*

and *canina*,' and in the 2nd vol. (1850), pp. 1–2, a 'Notice on *Potamogeton fluitans* Roth and *Ulex Gallii* Planch.'

Meanwhile, though these short notes suffice to show the writer's critical acumen, he was already giving proof of the direction in which that acumen was likely to be employed. In 1850 he took a first class in the Classical Tripos, and in 1851 a first class in both the Moral and the Natural Science Tripos. In 1851, however, he found time to publish, in the 3rd vol. of the *Botanical Gazette* (pp. 15–17), a note 'On *Euphorbia stricta* and *platyphylla*'; and in the same volume (pp. 155–7) appears a 'Note on *Athyrium filix-fœmina* var. *latifolium*,' dated 12th November, 1851, which was reprinted in the *Phytologist*, vol. iv., pp. 440–2. To this year also belongs his paper 'On a supposed new species of *Rubus*' (*Rubus imbricatus* Hort), which appeared in the *Annals and Magazine of Natural History*, vol. vii., pp. 374–7; but not until 1853 in the *Transactions of the Botanical Society of Edinburgh* (vol. iv., pp. 113–116), to which it had been communicated. In the 4th vol. of the *Phytologist* (1852), pp. 640–1, is a note by him on the 'Occurrence of *Orobanchæ cærulea* Vill. and *Aconitum Napellus* L. in Monmouthshire,' dated July 21st, 1852, and a 'Note on the third volume of Mr. H. C. Watson's *Cybele Britannica*' frankly corrected several blunders that had found their way into that work from his own list of Weston-super-Mare plants. This seems to have been Hort's last botanical publication; but he appears in *Topographical Botany* as a correspondent of Watson's from no less than 11 vice-counties, *viz.*, North Somerset, East and West Gloucester, Monmouth, Merioneth, Carnarvon, North Lancashire and Westmoreland, Cumberland, Durham, West Suffolk, and Cambridge.

In 1852 he was elected a Fellow of his College; in 1853 he proceeded M.A.; and in 1854 and 1856 respectively he took deacon's and priest's orders. In 1857 he resigned his fellowship of Trinity College on accepting the vicarage of St. Ippolyts and Great Wymondley, Herts. His Cambridge friend and contemporary, the Rev. W. W. Newbould, used always to speak of Hort's abandonment of botany in favour of biblical studies in much the same manner as Watson regretted that Edward Forbes' "attention had been drawn from botany to the more showy studies, in which he became eminent."

With Hort's subsequent career we are not here concerned. He became Divinity Lecturer and Fellow of Emmanuel College in 1872, Hulsean Professor of Divinity in 1878, and Lady Margaret Professor in 1887. He became D.D. of his own University in 1875; published two theological dissertations in 1876, and, jointly with Dr. Westcott, a revised Greek text of the New Testament in 1881. He served on the Revision Committee of the "Authorized Version" of the New Testament, and for these services to scholarship was elected an honorary LL.D. of Trinity College, Dublin, in 1888, and D.C.L. of Durham in 1890.

G. S. Boulger.

IN THE PRESS. TO BE PUBLISHED EARLY IN 1893.

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OF

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Director of the R. Bot. Gardens.

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NATURE NOTES,

THE SELBORNE SOCIETY'S MAGAZINE.

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JAMES BRITTEN, F.L.S.,

SENIOR ASSISTANT, DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY), SOUTH KENSINGTON.

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OUR ENDEMIC LIST.

By William H. Beeby.

To the British botanist, the most interesting chapter in the second edition of *Island Life* is doubtless that dealing with our own islands, containing, as it does, the first list yet published, of any extent, of our reputed endemic plant-forms. In the first edition the list comprised but four, while the present includes no less than seventy-five forms claimed as endemic. The list referred to is supplied by Mr. Arthur Bennett, and is supplemented by criticisms by Sir J. Hooker, and sometimes by Mr. J. G. Baker. These detailed criticisms deal chiefly with the relationship which is considered by them to exist between the list-forms and other types; the question as to whether or not the seventy-five forms are endemic being afterwards treated of in a summary, from which we learn that Sir J. Hooker would exclude fifty-five of the seventy-five forms from the endemic list, for "various reasons."

Before proceeding further, I desire to acknowledge fully that it is a far more difficult matter to draw up such a list as Mr. Bennett has presented to us, than it is to criticise it afterwards. Having admitted this much, I do not hesitate to say that I scarcely think that the list, as it stands, can be regarded as satisfactory. It seems to me very desirable that we should possess a well-digested list of our endemic plants, and the following observations on a few of the plants named in Mr. Bennett's list are made with this object in view. Some of the plants remarked upon below are already excluded in Sir J. Hooker's summary, but without sufficient reason being given for the course pursued.

Caltha radicans Forst. — From my experience of this and kindred forms, I should feel it very rash to assert that it is endemic. My reasons for taking this view are contained in previous papers, and need not be repeated here.

Brassica monensis Huds. — The form of *B. Cheiranthus* mentioned by Lloyd (*Fl. de l'Ouest*, ed. x. p. 24) should be compared with this; until the result of such a comparison is published, one would hardly feel disposed to accept *B. monensis* as endemic.

Diplotaxis muralis DC. var. *Babingtonii*.—Both biennial and perennial forms occur in France. Apparently endemic in name only.

Viola lutea Huds. var. *amœna*.—The varieties given by Koch (*Syn.* ed. ii. p. 94) seem to cover far more than all the British forms. Endemic in name only, apparently.

Cerastium arcticum Lange, var. *Edmondstonii*.—Although this differs from the type chiefly in its purplish copper-coloured foliage, the character is retained to a very considerable extent in cultivation. It is true that *C. alpinum* is a very variable plant; it sometimes approaches *C. arcticum* very closely in habit. But the marked difference in the sculpturing of the seeds, pointed out by

H. C. Watson a great many years ago, is not variable, and is easily apparent to anyone who is accustomed to compare the two. Undoubtedly, however, *C. arcticum* is more nearly allied to *C. alpinum* than to *C. latifolium* L.

Anthyllis Vulneraria L., var. *ovata*.—I am disappointed to learn that this remarkably beautiful plant reverts at once to the type in cultivation; from Mr. J. G. Baker's experiment it would appear that it is merely a state due to situation, and it should accordingly be expunged from our lists.

Trifolium repens L., var. *Townsendi*.—I should not venture to accept this as endemic until the result has been published of a comparison between it and the plant referred to under *T. repens* by Boreau (*Fl. du Centre*, ed. iii., p. 158) as "*T. prostratum* Biasol.?" the description of which applies very well to *Townsendi*.

Œnanthe fluviatilis Colem.—In the opinion of the first Fen botanist of the day this plant is probably distinct. Sir J. Hooker, in his criticism, speaks of it as the "fluitant form of *Œ. Phellandrium*," but what this expression is intended to imply is not very clear; it can hardly be intended to mean that it is merely a state due to situation, as in his summary it is called a variety, while in his *Students' Flora* it ranks as a subspecies!

Chenopodium rubrum L., var. *pseudo-botryodes*. — I thought Watson had shown this to be merely a state due to environment. However, as it is claimed as endemic, it would be interesting to know what state the species assumes on the Continent when growing there in situations similar to those which here produce *pseudo-botryodes*.

Carex involuta Bab.—Accepted as endemic by Hooker, who remarks, however, that it is probably a hybrid between *C. vesicaria* and *C. ampullacea*. This hybrid occurs both on the Continent and in Scandinavia.

Hieracium. — Mr. Bennett quotes fifteen endemic forms, a number which might be greatly increased. On all of these Sir J. Hooker and Mr. J. G. Baker say:—"No case can be made of these. They are local forms with the shadowiest of shady characters." I confess that the real intent of this criticism seems to me somewhat obscure (some might feel inclined to ask, what is an endemic species but a local form?); but surely nobody would expect to find in a recently separated island, forms as distinct as those found in anciently separated islands? Were this the case, the phenomena of distribution would indeed present a hopeless puzzle! However, compared with the channel which separates, say, Madagascar from *its* continent, we are separated from *our* continent by the "shadowiest of shady" channels, so that our endemic forms of *Hieracium* are just what they ought to be, although this, the really interesting and important feature in the case, is entirely ignored. In a recent island it is only natural to expect to find most of the endemic forms among the more critical, or in other words, more plastic, groups. We know that the great bulk of our named *Hieracia* are not merely states due to situation; their characters

have been proved to be permanent by cultivation under varied conditions, all of which are different from their own original habitats. Their kind of variation is therefore specific in its nature, and we will leave it to others who are interested in the point to allot them exactly such rank as seems fit to them. It should be remarked here that a very close study having been given to the *Hieracia* in Scandinavia, we may with some safety assume that the bulk of the plants now considered to be endemic here will eventually prove to be really so.

While on these points, I take the opportunity of calling attention to the persistent efforts that have for some time past been made to disparage the study of the finely separated species. The *raison d'être* of these attacks is not expressed in the papers themselves, but it is quite well understood by British botanists. I protest against anyone assuming to write in the "Darwinian sense," as Mr. C. B. Clarke does, and at the same time (or previously) sneering at investigations of the kind referred to. One is not altogether unaccustomed to hear it stated that if there really be such a thing as Evolution, we ought to see it at work around us. It may be pretty safely predicted that those who despise the study of ultra-critical plants will *never* see it; it must be remembered that in such groups as the *Hieracia* there are, beyond the named forms, yet others, whose variation is too slight to receive a name, but is at the same time quite perceptible to those who intimately study the group. In such groups, perhaps, if anywhere, we may see Evolution in its active state.

One can easily understand how galling it must be to the mere plant-sorter, to see the increasing study of the more critical groups that is growing up,—in other words, to see how his power is slipping away from him; but it does seem an anomaly that one writing from the Darwinian point of view should fail to see the extreme value of studying those groups in which the forms run closest.

Hieracium auratum Fr.—This should have been included in the American British list. It will not, probably, be contended that it is a local form; in its wide distribution in Scotland (from Shetland southwards), due to the pappus-borne fruit, it forms a notable exception to the rest of the American group.

Besides the plants referred to above, there are various others in Mr. Bennett's list which I should not venture to accept as endemic; as, however, the exclusion of these rests mainly on individual opinion, it is perhaps not worth while to name them at present. There are also some which may be eventually added to the list, but in the present early stage of their history, it would be premature to accord them such rank.

SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from vol. xxx., p. 332.)

XVII. BASTARDIA H.B.K. Nov. Gen. et Spec. v. p. 254, t. 472.—Bracteolæ 0. Carpella in capsulam loculicide 3–5-valvem connata.

1. B. viscosa H.B.K. *l. c.* p. 256; L'Herit. Stirp. t. 53 bis. *B. Guayaquilensis* Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 201. *Abutilon fœtidum* Moench, Meth. Supp. p. 206. *Sida viscosa* L.; DC. Prod. i. p. 467. *S. fœtida* Cav.; DC. Prod. *l. c.* *S. Maydalenæ* DC. Prod. *l. c.* *? S. brevipes* DC. Prod. *l. c.*

Hab. West Indies! Mexico! Guatemala! Ecuador. Venezuela! New Granada. Peru.

Var. α. Grisebach, Fl. Brit. West Indies, p. 80.

Hab. West Indies.

Var. β. parvifolia Grisebach, *l. c.* *Bastardia parvifolia* H.B.K. *l. c.* p. 255, t. 472. *Sida Bastardia* DC. Prod. i. p. 467.

Hab. Brazil. West Indies. Cuba!

Var. γ. fragrans. *Sida fragrans* L'Herit. Stirp. p. 111, t. 53.—Planta fragrans, folia majore quam typo pedunculis petiolo brevioribus, carpellis 5.

Hab. St. Domingo.

2. B. hirsutiflora Presl, Reliq. Haenk. ii. p. 112. *B. hirsutissima* Walp. Rep. i. p. 327. *S. hirsutissima* Dietr. Synop. iv. p. 850.

Hab. Mexico, nr. Acapulco, *Haenke*! *Barclay*! Colima, *Palmer*, No. 1307!

This plant has only three carpels.

3. B. conferta Garcke et K. Schum. in Fl. Brazil, Fasc. cix. p. 362, t. 66.

Hab. Brazil, *Glaziou*, No. 14516.

4. B. elegans K. Schum. in Fl. Brazil, *l. c.* p. 363.

Hab. Brazil, Prov. Minas Geraes, *Warming*, No. 1342.

5. B. bivalvis H.B.K. Nov. Gen. et Sp. v. p. 255. *B. aristata* Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 200. *B. spinifex* Tr. & Pl. Prod. Nov. Granat. p. 186. *Sida bivalvis* Cav.; DC. Prod. i. p. 464. *S. viscosa* MacFad. Fl. Jam., non L.

Hab. Brazil. New Granada! Ecuador! Jamaica!

6. B. Berlandieri A. Gray in Proc. Am. Acad. xxii. p. 295.

Hab. Mexico, nr. Tantoyuca, *Berlandier*, Nos. 747, 2167!

Species exclusæ.

Bastardia angulata Guill. & Perr. = *Abutilon intermedium* Hochst.
B. crispa St. Hil. = *Abutilon crispum* Sweet.
B. nemoralis St. Hil. = *Abutilon crispum* Sweet.

Subtribus 4. Abutileæ. — Carpella simplici serie verticillata. Ovula 2–∞ (rarius 1) sæpius adscendentia, nunc alia pendula alia adscendentia.

XVIII. HOWITTIA F. v. Muell. in Trans. Vict. Inst. i. p. 116.—Bracteolæ 0. Ovula gemina, collateralia. Carpella 3, in capsulam loculicide 3-valvem connata.

1. H. TRILOCULARIS F. v. Muell. *l. c.*
Hab. Australia. S. Australia. Victoria! New South Wales!

XIX. KYDIA Roxb. Pl. Corom. iii. p. 11, t. 215, 216.—Bracteolæ 4–6. Carpella 2–3 in capsulam loculicide 2–3-valvem connata.

1. K. CALYCINA Roxb. Hort. Beng. p. 50; Pl. Corom. iii. p. 11, t. 215. *K. Roxburghiana* Wight, Ic. ii. t. 881. *K. fraterna* Roxb. Pl. Corom. t. 216. *K. pulverulenta* Ham. in Wall. Cat. 1176.
Hab. India! Burmah! Tonquin! Pegu!

2. K. GLABRESCENS Mast. in Fl. Brit. Ind. i. p. 348.
Hab. North-east India, *Griffith*, 1794! Malacca!

Species exclusæ.

Kydia angustifolia Arn. = *Julostyles angustifolia* Thw.
K. axillaris Thwaites = *Dicellostyles axillaris* Benth.
K. jujubifolia Griff. = *Dicellostyles jujubifolia* Benth.

XX. WISSADULA Medik. Malv. p. 24.—Bracteolæ 0. Carpella apice divergentia plus minusve transversim appendiculata.

Sect. I. WISSADA Griseb. Fl. Brit. West Indies, p. 77 (Sectio SIDARUM).—Carpella 1-sperma rarissime multiora.

1. W. DIVERGENS Benth. & Hook. f. Gen. Plant. pp. 197 & 204. *Sida divergens* Benth. Voyage of Sulphur, p. 69. *S. periplocifolia* MacFad. Fl. Jam. p. 85, non alior.
Hab. Jamaica. Ecuador, nr. Guayaquil!

2. **W. Balansæ**, n. sp. — Caule ligneo ramoso erecto, foliis longe petiolatis cordato-ovatis apice subacuminatis distincte irregulariter crenato-serratis discoloribus supra sparse pubescentibus subtus molliter cinereo-velutinis 7–9-palmatinervatis, petiolis teretibus sparse cinereo-pubescentibus, floribus laxe paniculatis, pedicellis gracilibus, sepalis triangularibus acutis, petalis flavis calyce multo longioribus obovatis, stigmibus capitato-stigmatosis, carpellis externe pubescentibus apice acutis 1-spermis, seminibus applanatis fulvis angulatis.
Hab. Paraguay, nr. Villa Rica, in the Forests, *Balansa*, No. 1603!
Stem "1 metre"; leaves 4–5 in. long; petioles 3–5 in.; petals ¼ in. long.
The leaves of this plant are crenately serrated and discolorous.

Sect. II. EUWISSADULA K. Schum. *l. c.* p. 438. — Carpella 2–3-sperma matura plicis binis transversalibus lateribus spurie in loculamenta 2 superposita divisa, sæpius heterosperma.

3. W. ROSTRATA Planch. in Hook. Fl. Nig. p. 229. *W. Leschenaultiana* Mast. in Hook. Fl. Brit. Ind. i. p. 325. *W. hernandioides* Garcke in Zeit. fur Natur. lxiii. p. 122. *Abutilon parviflorum*

St. Hil. Fl. Bras. Merid. i. p. 201. *A. leucanthemum* St. Hil. Fl. Bras. Mer. i. p. 200. *A. hernandioides*, *A. polyanthon*, *A. Lucianum*, *A. Leschenaultianum* Sweet, Hort. Brit. ed. 1, p. 53. *A. contractum* Sweet, *l. c.*, ed. 2, p. 64. *A. laxiflorum* G. & P. Fl. Senegal, i. p. 66. *A. verbascoides* Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 202. *Sida racemosa* Vell. Fl. Flum. vii. t. 15. *S. polyantha* Schl. in Link Enum. ii. p. 204. *S. Luciana* & *S. Leschenaultiana* DC. Prod. i. p. 468. *S. rostrata* Schum. et Thonn. Beskr. af Guin. Pl. p. 306. *S. stellata* Don, Gen. Syst. p. 499. *S. amplexicaulis* & *? S. polystachya* Vell. Fl. Flum. vii. t. 21 & 22. *S. pauciflora* Dietr. Syn. iv. p. 851. *S. leucanthema* Dietr. Syn. iv. p. 852.

Hab. Trop. S. America! Paraguay! West Indies! Trop. Africa! India! Cape Verd Is.! Mauritius! Bourbon!

Sida periplocifolia L. var. *β.* in the Linnean Herbarium is represented by a specimen of *Sida dumosa* Swartz.

4. W. ZEYLANICA Med. Malv. p. 25. *W. periplocifolia* Presl, Reliq. Haenk. ii. p. 117; K. Schum. *l. c.* p. 441, t. 77. *W. rostrata* Pl. var. 1. *zeylanica* Mast. in Fl. Brit. Ind. i. p. 325. *Abutilon periplocifolium* Sweet, Hort. Brit. i. p. 53. *Sida periplocifolia* L.; DC. Prod. i. p. 467.

Hab. India! Ceylon! Malaya! Trop. America! Mexico. Cuba!

Var. WRIGHTIANA. *W. periplocifolia* var. *Wrightiana* Griseb. Cat. Pl. Cub. p. 25. *W. excelsior* Presl, Reliq. Haenk. ii. p. 117, t. 69, figs. a–m. *A. excelsior* G. Don, Gen. Syst. i. p. 500. *Sida excelsior* Cav.; DC. Prod. i. p. 468.

Hab. Mexico. Central America! Cuba, *Wright*, No. 2053! Peru.

Var. GUATEMALENSE.—Foliis ovatis acuminatis petiolatis subtus sparse stellato-ferrugineo-tomentosis, floribus paniculatis paniculis confertis terminalibus vel subterminalibus, carpellis aristatis.

Hab. Guatemala, "In dumetis Mazatenango," *Bernoulli*, No. 55!

Leaves 4 in. long, rather more than 2 in. broad; petioles 1–2 in.

5. W. CHAPELIERI. *A. Chapelieri* H. Baill. in Bull. Soc. Lin. Par. 1885, p. 508.

Hab. Madagascar, bor. or. *Chapelier*!

6. W. PATENS Garcke in Zeit. fur Naturw. 1890, p. 123. *Abutilon patens* St. Hil. Fl. Bras. Merid. p. 200. *Sida patens* Dietr. Synop. iv. p. 851.

Hab. Brazil. Provs. Rio Janeiro! Minas Geraes.

7. W. FERRUGINEA Garcke et K. Schum. in Fl. Brazil, *l. c.* p. 443. *Sida ferruginea* DC. Prod. i. p. 468. *Abutilon ferrugineum* H. B. K. Nov. Gen. et Sp. v. p. 271.

Hab. Peru. Valley of Paulo, alt. 7000 ft., *Jameson*!

8. W. NUDIFLORA Garcke in Zeit. fur Naturw. 1890, p. 123. *W. stellata* K. Schum. *l. c.* p. 445. *Sida stellata* Cav.; DC. Prod. i. p. 468. *S. nudiflora* L'Herit. Stirp. Nov. p. 123, t. 59. *Abutilon nudiflorum* Sweet, Hort. Brit. ed. 2, p. 64.

Hab. Peru. Bolivia! St. Domingo.

9. W. HIRSUTA Presl, Reliq. Haenk. ii. p. 118. *Abutilon crinitum* Klotz. in Linnæa, xiv. p. 301.
Hab. Brazil !

10. W. GYMNANTHEMUM K. Schum. *l. c.* p. 446. *Abutilon gymnanthemum* Gris. Symb. ad Fl. Arg. p. 44. *A. wissadifolium* Gris. *l. c.* p. 47.
Hab. Argentine Republic.

11. W. ANDINUM Britton in Bull. Tor. Club, xvi. p. 153.
Hab. Bolivia, Capi, *M. Bang*, No. 768 ! Cuesto of Purrochuco, *A. Mathews*, No. 504 !

Sect. III. WISSADULASTRUM K. Schum. *l. c.* p. 439. — Carpella 2–3-sperma dissipimenti horizontali a dorso abeunti in loculamenta superposita bina divisa. Inflorescentia contracta.

12. W. SPICATA Presl, Reliq. Haenk. ii. p. 117, t. lxix. figs. 1–14; K. Schum. *l. c.* p. 448, t. lxxviii. *W. gymnostachya* et *W. Jamesoni* Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 202. *Abutilon spicatum* H. B. K. Nov. Gen. v. p. 271. *Sida spiciflora* DC. Prod. i. 468.
Hab. Trop. America ! Cuba ! Mexico ! Guatemala !

Sect. IV. ABUTILASTRUM.—Carpella 3-rarissime 4-sperma; dissepimento loculos undique dividente sed lateribus et angulo carpelli interne non adhærente. Inflorescentia paniculata. Folia serrata.

13. W. SCABRA Presl, Reliq. Haenk. ii. p. 117, t. 69, figs. 1–14.
Hab. Mexico !

Species exclusa.

W. holosericea Garcke = *Abutilon holosericeum* Scheele.

XXI. HORSFORDIA A. Gray in Proc. Am. Acad. xxii. p. 296. —Bracteolæ 0. Carpella 1–3-sperma, pars superior sæpius vacua mox accrescens, membranaceo-scariosa, et bipartita in alas 2.

1. H. ALATA A. Gray in Proc. Am. Acad. xxii. p. 297. *Sida alata* S. Wats. in Proc. Am. Acad. xx. p. 356.
Hab. Mexico. N.W. Sonora, *Pringle.*

2. H. NEWBERRYI A. Gray, *l. c.* *Abutilon Newberryi* S. Wats. in Proc. Am. Acad. xi. p. 125.
Hab. United States. Arizona. Lower California. Mexico !

3. H. ROTUNDIFOLIA S. Wats. in Proc. Am. Acad. xxiv. p. 40.
Hab. Mexico ! Lower California !

4. H. PALMERI S. Wats. *l. c.*
Hab. Lower California. Los Angelos Bay !

XXII. ABUTILON L. Fl. Zeylan. p. 219. — Bracteolæ 0. Carpella 2–∞ (rarissime 1-ovulata) apice divergentia vel rotundata intus nuda.

Sect. I. CEPHALABUTILON K. Schum. *l. c.* p. 366.—Stigmata capitata superne papillosa.

A. Carpella 1–2-ovulata rarissime multiora.

1. A. OXYPETALUM Triana & Planch. Flor. Nov. Granat. p. 184.
Hab. New Granada, *Schlim*, No. 290 ! Santa Martha, *Purdie* !

2. A. CORDATUM Garcke et K. Schum. *l. c.* p. 370.
Hab. Peru. Ecuador, *Jameson*, No. 605!

3. A. INTERMEDIUM Hochst. in Schweinf. Beitr. Fl. Aeth. p. 49. *A. angulatum* Mast. in Fl. Trop. Africa, i. p. 183. *Bastardia angulata* Guill. & Perr. Fl. Seneg. p. 65. *Sida acutangula* Steud. Nom. ii. p. 576. *S. angulosa* Bojer in herb.
Hab. Tropical Africa! Madagascar!

Var. MACROPHYLLUM. *Sida macrophylla* Hils. & Boj. in herb. ex Baill. *l. c.*—Fruticosum, caule angulata, foliis cordatis ovatis acutis discoloris supra fulvis subtus albo-cinereis, sepalis subacuminatis vel acuminatis.
Hab. Madagascar, nr. Tananarivo, *Bojer*. Port Leven, Ins. Sato, *Bernier*. Port Leven, *Vesco*, No. 2! *Boivin*, No. 259.

Var. GREVEANUM. *Sida Greveana* H. Baill. in Bull. Soc. Lin. Par. 1885, p. 504. — Fruticosum totum albo-pubescens, caulibus teretibus ramosis, foliis cordatis ovatis, pedunculis articulatis, carpellis 1-spermis reniformibus.
Hab. West Madagascar. Mouroundava, *Greve*, No. 22!

Var. FIGARIANUM. *A. graveolens* var. *Figarianum* Webb in herb. —Caule terete ramoso, foliis cordatis ovatis irregulariter dentatis, floribus paniculatis, carpellis 1–3-ovulatis reniformibus.
Hab. North-east Africa, nr. Matamma, *Schweinfurth*, No. 1418!

B. Carpella 3-ovulata rarissime multiora.

a. Inflorescentia umbellata.

— Carpella aristata vel rostrata.

4. A. UMBELLATUM Sweet, Hort. Brit. i. p. 53; Jacq. Hort. Vindob. t. 56. *Sida umbellata* L.; DC. Prod. i. p. 469. *S. obtusa* Cav.; DC. *l. c.*
Hab. West Indies! Mexico! New Granada. Peru.

5. A. UMBELLIFLORUM St. Hil. Fl. Bras. Merid. i. p. 204. *A. umbelliferum* Don, Gen. Syst. i. p. 501. *Sida umbellifera* Dietr. Synop. iv. p. 853.
Hab. Brazil. Prov. Rio Grande do Sul.

— — Carpella mutica.

6. A. FLÜCKIGERIANUM K. Schum. *l. c.* p. 370, t. lxvii.
Hab. South Brazil or Uruguay, *Sellow*, 1741. Argentine Republic.

7. A. IBARRENSE H. B. K. Nov. Gen. et Sp. v. p. 272. *Sida ibarrensis* DC. Prod. i. p. 470.
Hab. New Granada! Ecuador.

8. A. TERMINALE St. Hil. Fl. Bras. Merid. i. p. 203. *Sida terminalis* Cav.; DC. Prod. i. p. 471.
Hab. Brazil! Uruguay! Argentine Republic!

9. A. RIVULARE St. Hil. *l. c.* p. 202; K. Schum. *l. c.* t. lxviii. *A. affine* Don, Gen. Syst. i. p. 503. *Sida affinis* Spr. Syst. Veg. iii. p. 121. *S. rivularis* Dietr. Syn. iv. p. 854.
Hab. South Brazil or Uruguay, *Sellow*, Nos. 509, 714. Uruguay, nr. Monte Video, *Sellow*, No. 3168.

10. **A. discolor,** n. sp. — Caule ligneo erecto præcipue superne angulato et rufescente, foliis petiolatis cordatis ovatis acuminatis vel subacuminatis discoloris superne nigrescentibus subtus cinereo-pubescentibus 5–7-palmati-nervatis nervis subtus petiolisque ferrugineo-tomentosis, floribus umbellatis, sepalis externe ferrugineis lanceolatis acuminatis striatis, petalis calyce multo longioribus, stigmibus capitato-stigmatosis, carpellis reniformibus muticis externe pubescentibus, seminibus nigrescentibus.

Hab. Mexico. Tula, *Berlandier*, No. 2163! Herb. Mus. Brit.

Stem 1 foot high, possibly more; leaves about 4 in. long, rather more broad; petioles $1\frac{1}{2}$ in. long.

Possibly related to *A. geminiflorum* H. B. K.

11. **A. Galeottii,** n. sp. — Caule vel ramo ligneo, foliis ovatis apice acuminatis vel subacuminatis basi cordatis vel rotundatis utrinque minute stellato-pubescentibus, inflorescentia umbellata, pedunculis strictis teretibus minute rufo-stellato-pubescentibus juxta florem articulatis, sepalis externe rufescentibus acuminatis in mediam striatis, petalis flavis calyce longioribus obovatis vel oblanceolatis, stigmibus capitatis, fructibus junioribus dense stellato-pubescentibus.

Hab. Mexico, *Parkinson*! Vera Cruz, *Galeotti*, No. 4103! Herb. Kew.

Related to *Abutilon integerrimum* Turcz.

Peduncles nearly 3 in. long; petals $\frac{3}{4}$ in. long.

β. Inflorescentia plus minusve paniculata.

* Borealı- vel Centrali-Americana, Mexicana, Cubanaque interdum Ind. occidentalia rarissime Ins. Sandvicensia.

† Petala erecta.

12. A. Xanti A. Gray in Proc. Am. Acad. xxii. p. 301. *A. californicum* Benth. var. in Proc. Am. Acad. v. p. 154.

Hab. Lower California.

13. A. Sonoræ A. Gray, Pl. Wright. ii. p. 23.

Hab. Mexico! New Mexico!

14. A. Nealleyi Coulter in Contr. from Nat. Herb. vol. ii. p. 41.

Hab. West Texas. Hildago County.

15. A. reventum S. Wats. in Proc. Am. Acad. xxi. p. 418. *A. Sonoræ* var., A. Gray in Pl. Thurb. p. 308.

Hab. Mexico. Arizona.

This and the three preceding species have a naked compound panicle of small flowers.

16. A. Palmeri A. Gray in Proc. Am. Acad. vii. p. 289.

Hab. Mexico! Arizona. Lower California.

17. A. aurantiacum S. Wats. in Proc. Am. Acad. xx. p. 357.

Hab. Mexico. Isle of San Pedro Martir. Lower California.

18. A. incanum Sweet, Hort. Brit. i. p. 53. *A. ramosissimum* Presl, Reliq. Haenk. ii. p. 116, ex. descr. *Sida incana* Link; DC. Prod. i. p. 468. *A. Texense* & *A. Nuttallii* Torr. & Gray, Fl. Amer. i. p. 231. *Sida ramosissima* Dietr. Synop. iv. p. 853.

Hab. Mexico! Texas! New Mexico. Arizona! Sandwich Is.!

19. A. TRIQUETRUM Presl, Reliq. Haenk. ii. p. 115. *Sida triquetra* L.; DC. Prod. i. p. 468. *S. trisulcata* Jacq. Am. p. 195.
Hab. Mexico! Yucatan! Cuba!

20. A. FLORIBUNDUM Schl. in Linnæa, xi. p. 366. *Sida Keerlena* Steud. Nom. Bot.
Hab. South Mexico.

21. A. MALACUM S. Wats. in Proc. Am. Acad. xxi. p. 446.
Hab. Mexico. Chihuahua!

22. A. HOLOSERICEUM Scheele in Linnæa, xxi. p. 471. *A. velutinum* A. Gray, Ill. Gen. Pl. Am. bor. ii. p. 67, t. 125.
Hab. Mexico! New Mexico! Texas.
This plant has been referred by A. Garcke in Zeit. fur Naturw. 1890, p. 124, to *Wissadula*. It is possibly the same as *A. erosum* Schl. in Linnæa, xi. p. 367 (*S. suberosa* Dietr. Syn. iv. p. 853).

23. A. ANDRIEUXII Hemsl. Diag. Pl. Nov. pars alt. p. 24.
Hab. South Mexico. Oaxaca, *Andrieux*, No. 552!

24. A. HAENKEANUM Presl, Reliq. Haenk. ii. p. 115. *Sida Presliana* Dietr. Synop. iv. p. 856.
Hab. West Mexico, *Haenke*!

† † Petala reflexa vel subreflexa.

25. A. DIVARICATUM Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 204.
Hab. South Mexico, nr. Vera Cruz, *Linden*, No. 1378! *Galeotti*, No. 4071. Cordova, *Bourgeau*, No. 1740.

26. A. MEXICANUM Presl, Reliq. Haenk. ii. p. 115. *Sida bibracteolata* Dietr. Synop. iv. p. 856.
Hab. Mexico. Guatemala!
Allied to *A. petiolare* H. B. K.

27. A. ELATUM Griseb. Fl. Brit. West Indies, p. 79. *Sida elata* MacFad. Fl. Jam. p. 87.
Hab. South Mexico! Jamaica!

28. A. CONFERTIFLORUM A. Rich. Fl. Cub. i. p. 153. *Sida confertiflora* Dietr. Synop. iv. p. 856.
Hab. Cuba, *Wright*, No. 1572! Trinidad!

* * Australi-Americana Ins. Galapagensia rarissime Centrali-Americana.

29. A. THYRSODENDRON Griseb. in Goett. Abhand. xxiv. p. 48.
Hab. Argentine Republic.

30. A. RAMIFLORUM St. Hil. Fl. Bras. Merid. i. p. 199. *? Sida polystachya* Vell. Fl. Flum. vii. t. 22. *S. ramiflora* Dietr. Synop. iv. p. 852.
Hab. Paraguay, *Balansa*, 1608! *Gibert*! Brazil, *Herb. Imp. Vienna*, No. 1308!

31. A. ARISTULOSUM K. Schum. *l. c.* p. 380.
Hab. Brazil, nr. Piccada, *Pohl*, No. 3289 (d. n. 1321).

32. A. ANDERSSONIANUM Garcke ex Andersson, Galap. Oar. Veget. p. 98.
Hab. Galapagos Is.!

33. A. GIGANTEUM Presl, Reliq. Haenk. ii. p. 116. *Sida gigantea* Jacq. Hort. Schoenb. ii. p. 8, t. 141.

Hab. Mexico! New Granada! Peru! Venezuela, *Fendler*, 2287! 95.

Var. DETONSA Triana & Planch. Prod. Fl. Nov. Granat. p. 183.

Hab. New Granada!

Related to *A. elatum* Griseb.

34. A. STENOPETALUM Garcke in Bot. Zeit. 1850, p. 683.

Hab. Venezuela, *Funcke et Schlim*, No. 130!

35. A. CYMOSUM Tr. & Pl. Prod. Fl. Nov. Granat. p. 185. *A. rufinerve* Seem. Bot. Herald, p. 83.

Hab. Panama! New Granada! Bolivia!

36. A. GREVILLEANUM Walp. Rep. i. p. 158. *Sida Grevilleana* Gill. in Bot. Misc. iii. p. 154. *S. Doniana* Gill. MS.

Hab. Chili! Ecuador, *Jameson*, 605 in part!

* * * Bahamense.

37. **A. Eggersii**, n. sp. — Caule erecto fruticoso ramoso tereto velutino, foliis petiolatis ovatis acuminatis vel subacuminatis acute 5-lobatis lobo medio majore parce discoloris utrinque molliter cinereo-pubescentibus basi cordatis serratis, floribus paniculatis paniculis foliosis, pedunculis pedicellisque teretibus cinereo- vel fulvo-velutinis, sepalis ovatis acutis, petalis roseis, carpellis 20–25 reniformibus calyce multo superantibus dorso pubescentibus lateribus membranaceis 2-spermis, seminibus reniformibus nigrescentibus.

Hab. Bahamas. "In sylvestribus New Providence, Seven Hills," *Eggers*, No. 4288! Herb. Mus. Brit.

Stem about 8 ft. high; leaves about 3 in. long; petioles 1–1½ in.; carpels ⅜ in. long.

The carpels of this plant are entirely muticous and reniform, and resemble those of *Abutilon muticum*.

* * * * Gerontogea.

38. A. RAMOSUM Guill. & Perr. Fl. Seneg. i. p. 68. *A. sparmannioides* Guill. & Perr. *l. c.* p. 70. *A. elæocarpoides* Webb, Frag. Fl. Aeth. p. 52. *A. sidoides* Dalz. & Gibs. Bomb. Fl. p. 18. *Sida ramosa* Cav.; DC. Prod. i. p. 469.

Hab. Tropical Africa! India, North-West Provinces. Closely related to *A. cymosum* Tr. & Pl.

39. A. BIDENTATUM Hochst. in Fl. Abyss. i. p. 68. *Sida bidentata* Hochst.

Hab. Tropical Africa! India! Arabia.

40. A. LONGICUSPE Hochst. ex Rich. Tent. Fl. Abyss. i. p. 68. *Sida longicuspis* Hochst. in herb. *S. acuminata* R. Br. in Salt. Abyss. p. 65.

Hab. Abyssinia! Mozambique District!

Var. HILDEBRANDTII. — Caule ligneo ramoso, foliis cordatis acuminatis serratis, floribus axillaribus, petalis obcuneatis reflexis, carpellis apiculatis.

Hab. East Africa. N'di (Taita), *J. M. Hildebrandt*, No. 2633! Differs from the type in the carpels, which are pointed.

41. A. AURITUM Sweet, Hort. Brit. i. p. 53. *A. atropurpureum* Don, Gen. Syst. i. p. 502. *A. pyramidale* Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 203. *A. stipulare* Presl, Reliq. Haenk. ii. p. 114. *A. Guichenotianum* Dec. in Herb. Timor. Desc. p. 106. *Sida atropurpurea* Bl. Bij. i. p. 77. *S. aurita* DC. Prod. i. p. 468; Bot. Mag. t. 2495.

Hab. Malaya! Philippine Is.! Queensland! New Caledonia! Naturalised largely in the Tropics.

42. A. TIMORIENSE Don, Gen. Syst. i. p. 500. *Sida Timoriensis* DC. Prod. i. p. 468.

Hab. Timor.

Sida Pentacarpos Roxb., DC. Prod. i. p. 473, and *S. Sesei* Lag. Nov. Gen. p. 21, are doubtful species belonging to this group.

(To be continued.)

THE MOSSES OF GUERNSEY.

By E. D. MARQUAND.

So little seems to be known about the cryptogamic flora of Guernsey, that perhaps a list of the mosses I have collected in the island during the last three or four years may be of interest. Considering the small size of the island,—its area is under twenty-five square miles,—its moss-flora is an extremely rich one, no less than 142 species being enumerated below. And it is certain that many additions are yet to be made, especially among the spring and summer-fruiting species, for my moss collecting has been confined almost entirely to late autumn and winter. Many species of common distribution in the south-west of England, however, seem wanting here; but this only accords with what I have found to be the case in every other section of plant-life. Why these common species should here be either excessively rare or altogether absent, it is not easy to explain; but at any rate it suggests many points for consideration in studying the general distribution of plants from given centres. Guernsey, it must be borne in mind, is geologically the oldest of the Channel Isles; it was a detached island at a period long anterior to the separation of the others from the mainland of what we now call France.

It is probable that the moss-flora of Guernsey in its general character approaches more nearly that of Cornwall than any other English county. From the similarity of soil, climate and general features, one might judge that it would be so; but there is also a certain resemblance to the south of Ireland.

Three species in the subjoined list I have not myself seen here, viz., *Fissidens exilis*, *Hypnum molluscum*, and *Bryum Mildeanum*; but they are recorded in the *Revue Bryologique* for 1887 as having been gathered in Guernsey by Mons. J. Cardot during a hurried

visit to the island in 1885; and in Braithwaite's *Moss-Flora*, vol. ii. p. 81, the *Bryum* is noted for Guernsey on the authority of the French bryologist. I know of no other authenticated moss-records for this island. The list of species given in Ansted's *Channel Islands* is utterly worthless, and the deductions drawn from it by the author of the book (who was not the compiler of the list) are perfectly absurd.

Seeing that the highest elevation of land hardly exceeds 400 ft. above sea-level, the occurrence in the island of such mosses as *Bryum alpinum*, *Grimmia leucophæa*, and some other sub-alpine species, is rather remarkable. Among those most noteworthy by their rarity may be mentioned *Fissidens rivularis*, which occurs on the sides of a small waterfall on the south coast, fruiting abundantly in October; and *Trichostomum* (*Mollia*) *lutescens*, of which this is the second known locality in the kingdom, the other station being Killarney. These, as well as many others of my doubtful gatherings, have been identified by my friend Mr. Henry Boswell, M.A., to whom I am much indebted for kindly assistance in my moss-work during many years past. It is unnecessary to encumber these pages with the local names of habitats and other points of use only to a worker on the spot; it will suffice to give a general idea of the comparative distribution of each species in the island, and anyone wanting more precise information will find it in a paper which will appear in the forthcoming *Transactions* of the Guernsey Society of Natural Science.

I hope in a future paper to give a list of the Hepaticæ of Guernsey; meanwhile it may be well to place on record the occurrence of the excessively rare *Cephalozia Turneri*, which occurs in very small quantity intermixed with other minute forms on a gravelly bank near the sea; and also of the Irish hepatic, *Lophocolea spicata*, which Mr. Boswell and I found during one of our rambles last August; it occurs plentifully at the original station, and since then I have gathered it in two or three widely-separated localities, so that it seems to be a fairly distributed plant in Guernsey. *Lophocolea spicata* was first discovered in England some five or six years ago by my old friend the late Mr. W. Curnow, who found it on the extreme western coast of Cornwall, at St. Just, near the Land's End, and I am not aware that it has been seen elsewhere; so that its occurrence in Guernsey, in a direct line from the south of Ireland, through West Cornwall, is of peculiar interest.

Sphagnum acutifolium Ehr. Very rare.
Gymnostomum microstomum Hedw. Rather rare.
Weissia controversa Hedw. Common.
W. mucronata Bruch. Rare.
Dicranella heteromalla Hedw. Common.
D. scoparium L. Common. — Var. *orthophyllum*. On the southern cliffs.
D. majus Turn. Rare.
Campylopus brevipilus B. & S. Very rare.
C. introflexus Brid. Common on the cliffs.
C. flexuosus Brid. Rare.
C. subulatus Sch. Very rare.
C. fragilis B. & S. Common.
C. pyriformis Brid. Rare.
Leucobryum glaucum L. Local and rare.

Pleuridium nitidum Hedw. Found but once.
P. subulatum L. Frequent.
P. cuspidatum Schreb. Rather common.
Pottia truncata L. Common.
P. intermedia Turn. Rather common.
P. Wilsoni Hook. Rare.
P. littoralis Mitt. Rare.
P. asperula Mitt. Rare.
P. Heimii Hedw. Very rare.
Didymodon rubellus B. & S. Rather rare.
D. luridus Hornsch. Rare.
Ditrichum flexicaule Schwg. Very rare.
Trichostomum tophaceum Brid. Rare.
T. mutabile Bruch. Common.—Var. *cophocarpa*. Rather rare.
T. (Mollia) lutescens Lind. (Braith. Moss Fl. p. 246). Very rare.
T. flavo-virens Bruch. Common near the sea.
T. littorale Mitt. Rather common.
Barbula ambigua B. & S. Rather rare.
B. atrovirens Sm. Frequent near the sea.
B. muralis L. Very common.
B. unguiculata Dill. Common.
B. cylindrica Tayl. Rather common.
B. vinealis Brid. Common.
B. Hornschuchiana Sch. Very rare.
B. revoluta Schwg. Common.
B. convoluta Hedw. Rare.
B. commutata Sur. Very rare.
B. squarrosa Brid. Rather common near the sea.
B. lævipila Brid. Rather common.
B. montana Nees. Rare.
B. ruralis L. Common on the sandhills.
Ceratodon purpureus L. Very common.
Grimmia maritima Turn. Common on the coast.
G. pulvinata Dill. Rather common.
G. trichophylla Grev. Common.
G. leucophæa Grev. Common on the cliffs; fruiting abundantly in one place.
Rhacomitrium heterostichum, var. *β.* (*Grimmia affinis* Braith.). Rare.
Ptychomitrium polyphyllum Dicks. Very rare.
Zygodon viridissimus Dicks. Common.—Var. *rupestris*. Rare.
Z. Stirtoni. Very rare.
Ulota phyllantha Brid. Common.
Orthotrichum affine Schrad. Rather rare.
O. tenellum Bruch. Rare.
O. diaphanum Schrad. Rather common.
O. pulchellum Sm. Very rare.
Physcomitrium pyriforme L. Rare.
Entosthodon ericetorum Bals. Frequent on the cliffs.
Funaria hygrometrica L. Common.
Bartramia pomiformis L. Common.
Philonotis fontana L. Very rare.
Leptobryum pyriforme L. In greenhouse flower-pots.
Bryum pendulum Hornsch. Rare.
B. murale Wils. Rather rare.
B. atropurpureum W. & M. Rather common.
B. Mildeanum Juratz. (Cardot, 1885).
B. alpinum L. Southern cliffs, rare.
B. cæspititium L. Rather common.
B. argenteum L. Rather rare.
B. capillare L. Common.
B. pseudotriquetrum Hedw. Rare.
Mnium undulatum Hedw. Rare.
M. rostratum L. Very rare.
M. hornum L. Very common.
M. punctatum Hedw. Very rare.
Aulacomnion palustre L. Rare.
Atrichum undulatum L. Rather common.

Pogonatum nanum Neck. Rather rare.
P. aloides Hedw. More common than the last.
Polytrichum formosum Hedw. Frequent.
P. piliferum Schreb. Southern cliffs, frequent.
P. juniperinum Willd. Common.
Fissidens bryoides Hedw. Very common.
F. Curnowii Mitt. Found but once.
F. exilis Hedw. (Cardot, 1885).
F. viridulus Wils. Rare.
F. rivularis Spruce (Braith. M. Fl. p. 84). Very rare.
F. adiantoides Hedw. Rather common.
F. taxifolius L. Rare.
Cryphæa heteromalla Hedw. Very rare.
Leptodon Smithii Dicks. Very rare, growing on a boulder. It is very unusual to find this moss growing on stone.
Neckera complanata L. Rather common.
Homalia trichomanoides Schreb. Rare.
Pterygophyllum lucens Sm. Rather common.
Thuidium tamariscinum Hedw. Common.
Pterogonium gracile Dill. Rare.
Thamnium alopecurum L. Rather common.
Pylaisia polyantha Schreb. Very rare.
Isothecium myurum Poll. Rather common.
Homalothecium sericeum L. Very common.
Camptothecium lutescens Huds. Common on the sandhills.
Scleropodium illecebrum Schwg. Common.
Brachythecium glareosum B. & S. Rare.
B. albicans Neck. Rather common.
B. rutabulum L. Very common.
B. rivulare B. & S. Rare.
B. plumosum Swartz. Common.
Eurhynchium myosuroides L. Common.
E. circinatum Brid. Rather common.
E. striatum Schreb. Common.
E. crassinervium Tayl. Rare.
E. piliferum Schreb. Frequent.
E. speciosum Brid. Rare.
E. Swartzii Turn. Rare.
E. prælongum Dill. Very common.
E. pumilum Wils. Rather common.
E. Teesdalii Sm. Very rare.
Rhynchostegium tenellum Dicks. Rare.
R. confertum Dicks. Very common.
R. megapolitanum Bland. Very rare.
R. ruscifolium Neck. Common.
Plagiothecium denticulatum L. Common.
P. Borrerianum Spruce. Rare.
P. sylvaticum L. Rather rare.
Amblystegium serpens L. Rather common.
A. irriguum Wils. Rare.
A. riparium L. Rare. — Var. *longifolium*. Very rare.
Hypnum filicinum L. Common.
H. cupressiforme L. Very common.—Var. *lacunosum*. Common.
H. resupinatum Wils. Very common.
H. molluscum Hedw. (Cardot, 1885). [rare.
H. stellatum Schreb. Local and
H. cuspidatum L. Very common.
H. purum L. Very common.
Hylocomium splendens Dill. Very rare.
H. brevirostre Ehr. Rare.
H. squarrosum L. Rather common.
H. loreum L. Rare.
H. triquetrum L. Rather rare.

RUBI OF WOBURN SANDS.

By Edward F. Linton, M.A.

There is a sandy tract on the borders of Bedfordshire and Buckinghamshire, where the L. & N. W. R. line from Bedford to Bletchley cuts the county boundary, which has a soil so similar to that of Bournemouth, that locally the village of Woburn Sands, which owes its origin to the planting here of the railway station for Woburn (two miles away), is sometimes spoken of as the "Midland Bournemouth." Owing to the foresight of a former Duke of Bedford, the low sandy hills are clothed with Scotch fir as the predominating tree; and it is not difficult to imagine oneself, when walking through the woodland rides, in the Talbot Woods or Branksome Park of the southern watering-place. It struck me that it would be interesting to compare the brambles of these two districts; and on the last day of September, 1892, I was able to spend several hours studying this genus on both sides of the boundary. I will take those within the county of Bucks first.

Bucks (24). — These I find, after consultation with Mr. Arthur Bennett and Mr. G. C. Druce, to be new to the county:—*Rubus plicatus* W. & N. The Rev. W. Moyle Rogers thought this had a peculiar look; not that he had any other name to suggest; as a matter of fact, I think it is simply peculiar in being shade-grown; consequently the leaves lose their plicate character; I have specimens with just such flat leaves from Derbyshire, Norfolk, and Surrey. The panicle is not at all untypical. — *R. nemoralis* P. J. Muell. (the ordinary *umbrosus*, auct.). In woodland, south of the village. — *R. pyramidalis* Kalt. Wooded side of a wet lane. The specimens are denuded of the usual thick clothing under the leaf, owing to the wet and shady situation; but Mr. Rogers arrived at the same conclusion, independently, that the plant was *R. pyramidalis*. There were a few bushes visible; probably more in the wood. —*R. Drejeri* G. Jensen. Named for me by the Rev. W. Moyle Rogers. Only one bush was noticed. It struck me at once as a species I was not familiar with, at least in the living state.—*R. rudis* Weihe. Only noticed in one spot: two or three bushes. This is a typical form of the plant, and identical with the Oxfordshire material which has been issued in Fasc. I. of the Set of British Rubi.—On a form of the *hirtus* group, found in fair quantity in the woodland just south of the village, Dr. W. O. Focke writes as follows:—"*R. flaccidifolius* P. J. Muell., I believe. It is distinguished from all forms of the *hirtus* group by its sepals reflexed in fruit." I am not aware that this has been noted for Britain before.—*R. dumetorum* W. & N. In hedgerows. — *R. Balfourianus* Blox. A good typical form of this variable species; hedgerows, south of the village.

Besides these I noticed *R. Idæus* L., in the woods; *R. rusticanus* Merc., *R. leucostachys* Schleich., and *R. Radula* Weihe, by roadsides, already recorded; also *R. macrophyllus* W. & N., abundant on the steep banks of a cutting in the road leading to Woburn, which,

I understand from Mr. Bennett, has not been placed on record for the county, but Mr. Druce tells me he has it from another part of Bucks.

Here I may mention that in College Wood, near Little Horwood, in a clay district of Bucks, I found the next day *R. adornatus* P. J. Muell., named for me by the Rev. W. Moyle Rogers, and very fine *R. echinatus* Lindl., in some profusion; both additional to *Top. Bot.* ed. 2.

Beds (30).—Of the brambles observed in Beds, Mr. A. Bennett tells me that those new to the county are *R. Lindleianus* Lees, *R. rhamnifolius* auct. angl., *R. rusticanus* Merc., *R. macrophyllus* W. & N., a glabrate form rather harsh under the leaf, *R. Radula* Weihe, *R. Balfourianus* Bloxam, and a form of *R. dumetorum* W. & N., all of them in hedgerows on the side of Woburn Sands towards Aspley Guise. In one of these untrimmed hedgerows a large bramble-bush took my attention, which had the aspect of *R. adscitus*; it was, however, perfectly barren, and by degrees I arrived at the conclusion that it was *R. Lindleianus* × *rusticanus*; a view in which the Rev. W. Moyle Rogers entirely concurs.

On comparing this list of the brambles of Woburn Sands with those of Bournemouth, I am struck by the dissimilarity of the two lists. In fact, only the most ubiquitous of our British brambles occur at both places.

A PROVISIONAL LIST OF THE MARINE ALGÆ OF THE CAPE OF GOOD HOPE.

By Ethel S. Barton.

(Continued from p. 65.)

Bryopsis cæspitosa Suhr. Seal Island, *Challenger*! Shore of Kaffraria, *Suhr*.

Geogr. Distr. Mauritius.

B. africana Aresch. Saldanha Bay to False Bay, *fide Areschoug*.

B. plumosa Ag. Kalk Bay, *Boodle*! Cape Point, *Boodle*! Camps Bay, *Tyson*!

Geogr. Distr. Atlantic. Australia. West Indies.

B. setacea Hering. (? incl. *B. myosuroides* Kütz.). Kei Mouth, *Flanagan*! Port Natal, *Krauss*! No. 222. (I have not seen an authentic specimen of *B. myosuroides* Kütz., but from his description and figure, Tab. Phyc. vol. vi., I have but little hesitation in pronouncing it to be *B. setacea* Hering.).

Caulerpa Holmesiana G. Murr. Algoa Bay, *Becker*! Kei Mouth, *Flanagan*!

C. Zeyheri J. Ag. Algoa Bay, *Becker*! Kei Mouth, *Flanagan*!

C. ligulata Harv. Simons Bay, *Challenger*! Kalk Bay, *Boodle*! False Bay, *McMillan*! Cape Agulhas, *Krauss*! *Hohenack*! Meeralgen, Nos. 206, 480. Cape Recife, *Bowerbank*! Algoa Bay, *Ecklon*, *Harvey*! *Sutherland*! *Bowerbank*! Kei Mouth. *Flanagan*

Natal, *Gueinzius*! Cape, *Areschoug*, Phyc. extraeurop. exsicc. No. 28; *Reliquiæ Brebiss.*! Ser. 2, No. 153.

C. CLAVIFERA J. Ag. Knysna, *Boodle*! Natal, *Gueinzius*!
Geogr. Distr. Tropical seas.

C. CHEMNITZIA Lam. Port Natal, *fide Areschoug.*
Geogr. Distr. Brazil. West Indies. Indian Ocean.

CODIUM TOMENTOSUM Ag. From mouth of Olifants River to Port Natal, *Drege.* Table Bay, *Krauss*, *Boodle*! Sea Point, *Boodle* False Bay, *Reynolds*! Algoa Bay, *Ecklon.* Kei Mouth, *Flanagan*! Natal, *Krauss.* Cape, *Brand*! *Gueinzius*! *Hb. Dickie*!
Geogr. Distr. General.

C. TENUE Kütz. Cape Agulhas, *Hohenack*! Meeralgen, No. 496.
Geogr. Distr. Red Sea.

C. ELONGATUM Ag. Cape, *Pappe*, *fide Kützing.* I have seen no specimens of this plant from the Cape. It is probable that those recorded are *C. Lindenbergii* Bind. See De Toni, *Sylloge Algarum* vol. i. p. 496.
Geogr. Distr. Atlantic. Mediterranean. Japan.

C. LINDENBERGII Bind. Cape, *Hb. Dickie*!
Geogr. Distr. N. Pacific?

C. PLATYLOBIUM Aresch. Port Elizabeth, *fide Areschoug.* Algoa Bay, *Hb. Dickie*! Cape Morgan, *Flanagan*!

C. LAMINARIOIDES Harv. Cape Point, *Boodle*!
Geogr. Distr. Australia.

HALIMEDA CUNEATA Hering. (incl. *H. obovata* Kütz.). Algoa Bay, *Sutherland*! Port Alfred, *Carr*! Natal, *Krauss.* Cape, *Hb. Dickie*!

III.—PHÆOPHYCEÆ.

FUCACEÆ.

BIFURCARIA BRASSICÆFORMIS Stackh. (= *Pycnophycus brassicæformis* Kütz., incl. *P. sisymbrioides* Kütz.). Cape Town, *Burchell*! Cape Point, *Boodle*! Sea Point, *Tyson*! Muysenberg, *Harvey*! Table Bay, *Pappe*! Algoa Bay, *Holub*! Natal, *Gueinzius*! Cape, *Hohenack.*! *Reeve*! *Scott Elliot*!

B. TUBERCULATUS Stackh. (= *Pycnophycus tuberculatus* Kütz.). Table Bay, *Wenek*! Cape Agulhas, *Hohenack.*! Knysna, *Krauss.* Cape, *Harvey*! *Hb. Dickie*!
Geogr. Distr. North Atlantic.

B. LEVIGATUS = PYCNOPHYCUS LEVIGATUS Kütz. Cape Agulhas, *Hohenack.*! No. 320.

FUCUS SERRATUS L. Cape, *Ecklon.*
Geogr. Distr. North Atlantic, Arctic and Baltic.

F. VESICULOSUS L. Cape, *Ecklon.*
Geogr. Distr. Northern seas. Australia.

F. CONSTRICTUS Harv. Camps Bay, *Tyson*! Table Bay, *Harvey*! *Pappe*! Green Point, *Harvey*! Cape, *Hb. Dickie*! This plant has been placed in several different genera by authors, i. e., *Carpoglossum*, *Fucodium*, and *Carpophyllum.* In several points it resembles

Ascophyllum, but for the present I retain Harvey's practice, and keep it in the genus *Fucus*.

CYSTOSEIRA TRIQUETRA Ag. Cape, *fide Bory*. Cape, *Koenig*.

C. ERICOIDES J. Ag. Cape Agulhas, *Hohenack*. !

Geogr. Distr. North Atlantic. Mediterranean. Adriatic.

SCABERIA AGARDHII Grev. Natal, *Krauss*.

Geogr. Distr. Australia. Tasmania.

CARPOPHYLLUM SCALARE Suhr. Cape, *Drege*.

CONTARINIA AUSTRALIS Endl. et Dies. Cape Agulhas, *Hohenack*. ! No. 218. Port Natal, *Gueinzius*, *Pöppig*. Cape, *Drege*. This may possibly be the same as *Carpophyllum scalare* Suhr, but as I have not seen the type-specimen of that plant, I must leave this point undecided for the present. In any case, however, the name *Contarinia* must fall, as that had been previously used for a genus of red algæ.

SARGASSUM ELEGANS Suhr. Cape, *Drege*.

S. LENDIGERUM Ag. Port Natal, *Krauss*.

Geogr. Distr. Warm Atlantic.

S. INCISIFOLIUM Ag. Saldanha Bay, *Ecklon*. Table Bay, *Wenek* ! Kalk Bay, *Boodle* ! *Pappe* ! Cape Agulhas, *Hohenack*. ! No. 219. Mouth of Zwart Valley, *Burchell* ! Knysna, *Krauss*. Plettenberg Bay, *H. D. Horne* ! Algoa Bay, *Holub* ! Cape, *Menzies*, *Hb. Dickie* ! *Harvey* ! *Drege* !

Var. NULLIPORA = CARPACANTHUS GLOMERATUS Kütz. Table Bay, *fide Grunow*.

Geogr. Distr. West Indies.

S. HETEROPHYLLUM Ag. Algoa Bay, *Hb. Dickie* ! Cape Colony, *Hb. Holmes* ! Port Natal, *Krauss* !

S. LONGIFOLIUM Ag. Simons Bay, *Pappe* ! Cape Agulhas, *Hohenack*. ! No. 169, *Steel* ! Port Alfred, *Slavin* ! Natal, *T. Cooper* ! Cape, *Hb. R. Brown* ! *Harvey* !,

Geogr. Distr. Indian Ocean and New Zealand.

S. VULGARE Ag. Knysna, *Boodle* ! Algoa Bay, *Ecklon*; *Hb. Dickie* ! Cape, *Harvey* !

β. TENUIFOLIUM. Port Natal, *Krauss*.

Geogr. Distr. Warm Atlantic. West Indies.

S. AFFINE J. Ag. Cape, *Hohenack*. ! Meeralgen, No. 365. Cape, *W. Ferguson* !

Geogr. Distr. West Indies,

S. PYRIFORME Ag. Port Natal, *Krauss*.

Geogr. Distr. Indian Ocean.

S. LINIFOLIUM J. Ag. Swellendam, *Ecklon*.

Geogr. Distr. Mediterranean (Canary Islands, rare). West Indies.

S. BACCIFERUM Ag. Cape, *Hb. Dickie* ! *Drege* !

Geogr. Distr. Warm oceans.

TURBINARIA DECURRENS Bory. Port Natal, *Krauss*.

Geogr. Distr. Indian Ocean, Malay Archipelago, China Seas.

Splachnidiaceæ.

Splachnidium rugosum Grev. Seal Island, *Challenger*! Sea Point, *Boodle*! False Bay, *Harvey*! Knysna, Natal, *Krauss*. Cape, *R. Brown*! *Koenig*, *Drege*, *Tyson*!

Geogr. Distr. Australia. New Zealand.

Dictyotaceæ.

Dictyota dichotoma J. Ag. Cape Point, *Boodle*! Kalk Bay, *Boodle*! Algoa Bay, *Ecklon*. Port Natal, *Drege*, *Krauss*! *Gueinzius*!

Var. implexa J. Ag. Cape Agulhas, *Hohenack.*! Meeralgen, No. 313.

Geogr. Distr. Warm and temperate oceans.

D. linearis Ag. Port Natal, *Krauss*.

Geogr. Distr. Mediterranean and neighbouring Atlantic. West Indies. [Red Sea ?].

D. nævosa J. Ag. Plettenberg Bay, *Horne*! Algoa Bay, *Ecklon*, *Hb. Dickie*! Algoa Bay to Port Natal, *Krauss*. Kei Mouth, *Flanagan*! Cape, *Pappe*!

Geogr. Distr. West Indies.

D. fasciola Lam. Cape Agulhas, *Hohenacker*! Meeralgen, No. 512.

Geogr. Distr. Mediterranean, Red Sea, West Indies.

D. inscripta J. Ag. Kalk Bay, *Pappe*!

D. denticulata Ag. Cape, *Hohenacker*! Meeralgen, No. 511.

D. liturata J. Ag. Kalk Bay, *Hb. Trin. Coll. Dublin*! J. Agardh includes under this name *D. Pappeana* Kütz. The specimen in Hb. Kew from the Cape named *D. Pappeana* in Pappe's writing is clearly a form of *D. nævosa* J. Ag., under which name I have therefore included that record.

Geogr. Distr. West Indies.

D. Pappeana Kütz. Kalk Bay, *Pappe*.

Species inquirenda.

D. polycarpa Sond. Simons Bay, *Pappe*.

Zonaria interrupta Ag. Table Bay, *Wenek*! Milk Bay (False Bay), *B. McMillan*! Cape Agulhas, *Hohenack.*! Meeralgen, No. 156. Plettenberg Bay, *H. D. Horne*! Algoa Bay, *Ecklon*, *Holub*! *Burchell*, *Hb. Dickie*! Port Alfred, *W. Carr*! Kei Mouth, *Flanagan*! Cape Colony, *ex Hb. Holmes*! Port Natal, *Dr. Stanger*! No. 3974; *Krauss*. Cape, *Pappe*! *Zeyher*! *Hb. Shuttleworth*! *Areschoug*, Phyc. extraeurop. exsicc. No. 58.

Geogr. Distr. Teneriffe, Indian Ocean, Tasmania, and New Zealand.

Z. plumbea Aresch. Natal Bay, *fide Areschoug*.

Z. multifida Harv. (= *Z. Harveyana* Pappe and *Phycopteris Harveyana* Kütz.). Kalk Bay, *Pappe*! Cape, *Harvey*! *Hohenack.*!

(To be continued.)

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from vol. xxx., p. 345.)

Pyrus torminalis Ehrh. Beitr. vi. 92 (1791). **1597.** "In Kent it groweth in great aboundance, especially about Southfleete and Gravesend."—Ger. 1288.

P. Aria Sm. Fl. Brit. ii. 534 (1800). **1570.** "In Angliæ frigidioribus sylvosis frequentem videas."—Lob. Adv. 435.

P. Aucuparia Gaertn. Fruct. ii. 45 (1791). **1562.** "Groweth in moyst woddes and it is called in Northumlande a rowne tre, &c."—Turn. ii. 143.

P. communis L. Sp. Pl. 479 (1753). **1562.** "Wylde Pere tre . . . well knowen."—Turn. ii. 108.

P. Malus L. Sp. Pl. 479 (1753). **1562.** "Malus sylvestris [called] in ye South countre a Crab tre in ye North countre a scarbtre."—Turn. ii. 47, back.

Mespilus germanica L. Sp. Pl. 478 (1753). **1597.** "Oftentimes in hedges among briars and brambles."—Ger. 1266. "In the hedges betwixt Hampsted heath and Highgate."—Merrett, 77.

Cratægus Oxyacantha L. Sp. Pl. 477 (1753). **1562.** "Our comō hawthorn."—Turn. ii. 73, back. "Oxyacantha . . . Angli *May* dicunt."—Lob. Adv. 443 (1570).

Cotoneaster integerrimus Med. Bot. 85 (1793). *C. vulgaris* Lindl. Syn. 104 (1829). **1828.** "On the limestone cliffs of the Great Ormshead, Carnarvonshire, in various places. Mr. W. Wilson, 1825."—Sm. Engl. Fl. iv. 268. From a note on the E. B. drawing, it appears that Wilson first noticed it in 1821 or 1822. Mr. J. W. Griffith perhaps discovered it in 1783; see E. B. S. 2713.

Saxifraga oppositifolia L. Sp. Pl. 402 (1753). **1677.** "Ingleborough," Yorkshire.—Ray, Cat. ed. 2, 269.

S. nivalis L. Sp. Pl. 401 (1753). **1641.** Johns. Merc. Bot. pars alt. 33 ("Sedum serratum, &c.").

S. stellaris L. Sp. Pl. 400 (1753). **1641.** "Upon the moyst Rockes at Snowdon."—Johns. Merc. Bot. pars alt. 19.

S. Geum L. Sp. Pl. 401 (1753). **1806.** "Discovered by Mr. J. T. Mackay on a mountain near Dingle, in the County of Kerry, Ireland, in September, 1804."—E. B. 1561.

S. umbrosa L. Sp. Pl. ed. 2, 574 (1762). **1697.** "Grows plentifully here with us in Ireland, on a mountain called the Mangerton, in Kerry."—Dr. T. Molyneux in Phil. Trans. xix. 510.

S. Hirculus L. Sp. Pl. 402 (1753). **1724.** "Found by Dr. Kingstone on Knotsford-moor, Cheshire."—R. Syn. iii. 355.

S. aizoides L. Sp. Pl. 403 (1753). **1670.** "On the sides of Ingleborough-hill (Yorksh.) . . . also . . . in Westmoreland."—Ray, Cat. 279.

S. tridactylites L. Sp. Pl. 404 (1753). **1597.** "Upon the bricke wall in Chauncerie lane [London] belonging to the Earle of Southampton."—Ger. 500.

S. rivularis L. Sp. Pl. 404 (1753). **1800.** "On Ben Nevis, Scotland. Dr. Townson."—Sm. Fl. Brit. ii. 454.

S. cernua L. Sp. Pl. 403 (1753). **1794.** "Amongst the rocks on the summit of Ben Lawers."—James Dickson in Trans. Linn. Soc. ii. 290.

S. granulata L. Sp. Pl. 402 (1753). **1568.** "In diverse places of England."—Turn. iii. 67 (with fig.).

S. cæspitosa L. Sp. Pl. 404 (1753). **1800.** "On alpine rocks above Lake Idwell, in Carnarvonshire, rare. J. W. Griffith, Esq., in Herb. Soc. Linn."—Sm. Fl. Brit. ii. 455.

S. decipiens Ehrh. **1798.** "Gathered wild on the rocks of Cwm Idwell, Carnarvonshire, North Wales, by Mr. Griffith, in the end of May last."—E. B. 455.

S. hypnoides L. Sp. Pl. 405 (1753). **1640.** "On the Mountaines of Lancashiere with us, as Mr. Hosket [Hesketh] told us."—Park. Theatr. 740.

Chrysosplenium oppositifolium L. Sp. Pl. 398 (1753). **1570.** "In Angliæ humentibus saxeis . . . . floret."—Lob. Adv. 267. "About Bath and Wels," &c.—Ger. 693.

C. alternifolium L. Sp. Pl. 398 (1753). **1666.** "Near Hedley, Hampshire, Mr. Brown."—Merrett, 109.

Parnassia palustris L. Sp. Pl. 275 (1753). **1597.** "In Lansdall and Craven, in the north part of England; at Doncaster," &c.—Ger. 692.

Ribes alpinum L. Sp. Pl. 200 (1753). **1688.** "In agro Eboracensi invenit D. Dodsworth."—Ray, Hist. ii. 1486.

R. rubrum L. Sp. Pl. 200 (1753). **1568.** "By a waters side at Clouer in Somerset shyre in the possession of Maister Horner."—Turn. iii. 63.

R. nigrum L. Sp. Pl. 201 (1753). **1660.** "By the rivers side at Abington" (Cambs).—R. C. C. 139.

Tillæa muscosa L. Sp. Pl. 129 (1753). **1775.** "On Drayton Heath and several other places near Norwich, in great plenty. First examined and ascertained by the Rev. Mr. [Henry] Bryant, in 1766."—Rose's Elements of Botany, App. 450.

Cotyledon Umbilicus L. Sp. Pl. 429 (1753). **1562.** "In welles and divers places of Summerset shyre."—Turn. ii. 169.

Sedum roseum Scop. Fl. Carn. ed. 2, 326 (1772). *S. Rhodiola* DC. (1805). **1597.** "Upon sundry mountains in the north part of England, especially in a place called Ingleborough Fels."—Ger. 426.

S. Telephium L. Sp. Pl. 430 (1753). **1597.** "Plentifully in . . . Englande."—Ger. 416.

S. villosum L. Sp. Pl. 432 (1753). **1666.** "On the North side of Ingleborough hill."—Merrett, 111.

S. album L. Sp. Pl. 432 (1753). **1634.** "In locis saxosis et asperis."—Johns. Merc. Bot. 67. "Very plentifully on many of the thatch'd houses in Chatteresse in the Isle of Ely" (Cambs.).—R. C. C. 153 (1660).

S. anglicum Huds. ii. 196 (1778). **1670.** "In sterilioribus Suffolciæ itinere à Yarmouth ad Dunwich plurimum observavimus."—Ray, Cat. 280.

S. acre L. Sp. Pl. 432 (1753). **1538.** "Sedum minus puto esse herbam quam vulgus appellat Thryft aut Stoncrop."—Turn. Lib.

S. rupestre L. Sp. Pl. 431 (1753). **1666.** "Sedum Divi Vincentii N. D. Mr. Goodyer."—Merrett, 111.

S. Forsterianum Sm. E. B. t. 1802. **1807.** "Gathered in 1806 by E. Forster, Jun., on a rock at the fall of the Rhydoll near the Devil's-bridge, Cardiganshire."—E. B. *l. c.*

Drosera rotundifolia L. Sp. Pl. 281 (1753). **1568.** "Rosa solis is a litle small herbe that groweth in mossey groundes and in fennes and watery mores."—Turn. iii. 79.

D. anglica Huds. ii. 135 (1778). **1640.** "This was sent me by Mr. Zanche Silliard an Apothecarie of Dublin in Ireland, which sort wee have growing by Ellestmere in Shropshire by the waysides (the report of Dr. Coote)."—Park. Theatr. 1953.

D. intermedia Hayne. **1660.** "On Hinton moor" (Cambs.) —R. C. C. 139 (1660). This may be the *Ros solis foliis oblongis* of Johns. Merc. Bot. p. 65 (1634).

Hippuris vulgaris L. Sp. Pl. 4 (1753). **1597.** "In waterish places."—Ger. 957. Near Sandwich, Kent.—Johnson, "Kent," p. 23 (1632).

Myriophyllum verticillatum L. Sp. Pl. 992 (1753). **1660.** "In the rivulet Stoure by the little Islet . . . above the Paper mills" (Cambs,).—R. C. C. 99.

M. spicatum L. Sp. Pl. 992 (1753). **1640.** "In our owne land."—Park. Theatr. 1258. "In the river [Cam] about Stretham ferry."—R. C. C. 99 (1660).

M. alterniflorum DC. Fl. Fr. v. 529. **1724.** "In fossa prope Lodden-Bridge, haud procul a Reading J. Bobart observavit." —Ray Syn. iii. 151.

Callitriche verna (aggregate), L. Sp. Pl. ed. ii. 6 (1762). **1597.** An "herbe of small reckoning that floteth upon the water called . . . Water Starwoort."—Ger. 681.

C. autumnalis L. Sp. Pl. ed. 2, 6 (1762). **1830.** "Llyn Maelog, Anglesea, Mr. W. Wilson."—Hook. Br. Fl. ed. i. 384.

Lythrum Salicaria L. Sp. Pl. 446 (1753). **1548.** "groweth by water sydes."—Turn. Names, E. ij back. "Under the Bishops house wall at Lambeth neere the water of Thames."—Ger. 388.

L. Hyssopifolia L. Sp. Pl. 447 (1753). **1633.** "Found by my friend Mr. Bowles at Dorchester in Oxfordshire." Johnson. —Ger. em. 582.

Peplis Portula L. Sp. Pl. 332 (1753). **1632.** Johnson, Kent," p. 33. "Betweene Clapham heath and Touting and betweene Kentish Towne and Hampstead."—Ger, em. 615.

Epilobium angustifolium L. Sp. Pl. 347 (1753). **1597.** "In Yorkshire in a place called the Hooke."—Ger. 388.

E. hirsutum L. Sp. Pl. 347 (1753). **1597.** "Neere the waters (but not in the waters) in all places for the most part."— Ger. 388.

E. parviflorum Schreb. Spic. 146 (1771). **1629.** Johnson 'Kent,' p. 8 ("Lysimachia siliquosa minor hirsuta").

E. montanum L. Sp. Pl. 348 (1753). **1570.** "In Anglia

observatur . . . locis . . . umbrosis saxosis aut minus udis."—Lob. Adv. 145.

E. lanceolatum Seb. & Maur. Fl. Rom. p. 138 (1818). **1847.** Frome Glen Stapleton near Bristol. Mr. G. H. K. Thwaites; sent to Bot. Soc. of London in 1847.—Phyt. ii. 762.

E. roseum Schreb. Spic. 147 (1771). **1798.** "Primum in Anglia a cel. Curtisio in Lambeth Marsh in comitatu Surr. detecta." —Symons, Synopsis, 199.

E. tetragonum (aggregate) L. Sp. Pl. 348 (1753). **1634.** "Lysimachia siliquosa glabra minor Bauh. In humidis saxosis." —Johns. Merc. Bot. p. 49.

E. obscurum Schreb. Spic. 147 (1771). **1856.** "Wyken, Warwickshire and Ilfracombe, Devon."—Bab. in Ann. N. H. ser. 2, xvii. 243. [The "E. virgatum" found near Lincoln by Dr. Deakin may have been this.—Florigr. Brit. p. 548.]

E. palustre L. Sp. Pl. 348 (1753). **1660.** "On Teversham Moor" (Cambs).—R. C. C. 93. But see Ger. em. p. 479.

E. alsinefolium Vill. Prosp. 45 (1779). **1677.** "In the rivulets on the sides of Cheviot hills."—Ray, Cat. ed. ii. 194.

E. anagallidifolium Lam. Dict. ii. 376 (1786). **1856.** "Lofty mountains of Scotland: Morne and Lochnagar, &c."—Babington, in Ann. & Mag. N. H. ser. 2. xvii. 312.

E. alpinum L. Sp. Pl. 348 (1753). **1777.** "On Ben Lomond, about two-thirds of the way up."—Lightf. Fl. Scot. 199.

Ludwigia apetala Walt. Fl. Carolin. 89 (1788). (*Isnardia palustris* L.). **1666.** "In a great Ditch neer the Moor at Peters field, Hamshire, Mr. Goodyer."—Merrett, 7.

Circæa lutetiana L. Sp. Pl. 9 (1753). **1597.** "Groweth in obscure and darke places."—Ger. 280.

C. alpina L. Sp. Pl. 9 (1753). **1762.** "Ad radices montium in Comitatibus Westmorlandico Eboracensi, &c., circa Dallam Tower in agro Westmorlandico."—Huds. i. 10.

Bryonia dioica Jacq. Fl. Austr. ii. 59 (1774). **1538.** "Ampelos leuce . . . . anglis Bryoni aut wylde nepe."—Turn. Lib. "Groweth in many places of Englande."—Turn. Names, B vj, back (1548).

Hydrocotyle vulgaris L. Sp. Pl. 234 (1753). **1562.** "Shepekyllinge penny grasse that groweth in merishe and waterye groundes."—Turn. Herb. ii. 169.

Eryngium maritimum L. Sp. Pl. 233 (1753). **1548.** "Groweth plentuously in Englande by the sea syde."—Turn. Names, D i.

E. campestre L. Sp. Pl. 233 (1753). **1670.** "On a rock which you descend to the ferry from Plymouth over into Cornwall." —Ray, Cat. 105. Found by Ray on July 7, 1662 (Ray, Iter.).

Sanicula europæa L. Sp. Pl. 235 (1753). **1548.** "Groweth communely in woddes."—Turn. Names, H iiij.

(To be continued.)

SHORT NOTES.

Vicia bithynica in Hampshire.—I found several plants of this species, in flower and fruit, on the sides of a ditch in a cultivated field at Bridgemary, near Gosport, on the east side of the Fareham Road, on Sept. 17, 1889. I sent some to Mr. Townsend, who confirmed my identification. It had been reported from Hants by the late Mr. Borrer, but Mr. Townsend thought the evidence insufficient.—J. E. Kelsall.

Rubus ammobius Focke in E. Ross.—In July, 1891, I met with a few bushes of a bramble near *plicatus*, but evidently distinct, growing upon shingle by the Carron river, about three miles from Bonar Bridge. Suspecting it to be the above, I carefully compared fresh specimens with the description in *Synopsis Ruborum Germaniæ*, and found them to agree in all essential particulars (stamen slightly exceeding the styles, petioles distinctly channelled above near their base, leaves frequently septenate, &c.), only differing by the somewhat stout prickles which may very likely be due to the effects of frequent inundations. The Rev. W. Moyle Rogers has, after some hesitation, endorsed my opinion. As Dr. Focke has disallowed the Perth specimens so named by Prof. Babington, which I should judge, from what I have heard about them, to be very different from the above-named form, it seems desirable to place the occurrence of the true plant on record.—Edward S. Marshall.

Ajuga pyramidalis (p. 50).—With reference to the altitude attained by this plant, I may mention that I have gathered it on the range between the Rieder Alp and the Eggisch-horn, in Upper Valais, at fully 7000 ft., a couple of thousand feet higher than its apparent range in Norway.—Edward S. Marshall.

NOTICES OF BOOKS.

English Botany: Supplement to the Third Edition. Part III. Compiled and illustrated by N. E. Brown. London: Bell. 5s.

With this number, which completes a volume, Mr. N. E. Brown's connection with the Supplement to *English Botany* comes to an end. He has brought the work down to the end of *Dipsaceæ*, and now hands it over to Mr. Arthur Bennett. We noticed the first part of the Supplement at some length in last year's *Journal* (p. 250), and see no reason to alter the general conclusions then expressed, but a word or two on the present number may be looked for by British botanists.

Mr. Brown has devoted a good deal of attention to the forms of *Pyrus Aria*, and those who know these difficult plants will be able to judge how far he has thrown light upon them. He disposes summarily of the hybrid Epilobia. He also writes nearly four pages about *Saxifraga hirta*, but here, as in very many other instances, we have to complain that he has not examined the material ready

to his hand. The types of Smith's *English Botany*, for instance, do not seem to have been consulted by Mr. Brown; he says, "I have not seen Mr. Carroll's specimens," and goes on to speculate as to what "his plant may be," or "may possibly represent," although a visit to the National Herbarium at South Kensington would have settled the matter. Dr. Syme's herbarium, although, by Mr. Hanbury's courtesy, always accessible to botanists, has, we believe, not once been consulted by Mr. Brown.

It is not only with regard to plants which have exercised the ablest and most critical of our British botanists that Mr. Brown dogmatises without hesitation. Questions of nativity are settled by him in the same offhand method. *Siler trilobum* "is naturalised," and apparently not worth a description; while of *Selinum Carvifolia*, the writer says — and the sentence is a fair sample of his style:—"The recent discovery (in 1880) of this plant in Britain, leads to the belief that it has been introduced at a comparatively recent date, although where it grows it has all the appearance of being a genuine native, and it is just possible that it may have been mistaken for *Peucedanum palustre;* still, had this been the case, there would probably be specimens of it preserved in the older herbaria under the latter name, but of this, so far as known to me, there appears to be no evidence." The readers of this Journal will remember that Mr. F. A. Lees dealt with the nativity of the *Selinum*, and came to the conclusion, after a careful examination of the Lincolnshire locality in which it was found, that the plant was native there; and that Mr. W. Marshall was of the same opinion with regard to the Cambridgeshire station.*

We cannot express regret that Mr. Brown is unable to continue an undertaking on which he has expended a great deal of time and trouble, but for which he is manifestly unsuited. Mr. Arthur Bennett, on the other hand, stands in the first rank of critical British botanists; he is accustomed to observe plants, not only in the herbarium, but in the growing state, both in the field and under cultivation. The modesty and caution with which he expresses his opinions lend additional weight to his conclusions, and his continuation of this work will be looked for with very great interest. We trust that he will not waste time and space over trivial questions of nomenclature, the consideration of which is entirely out of place in a *Supplement to English Botany*.

Report of the Conifer Conference held at the Chiswick Gardens, October, 1891. (Journal of the Royal Horticultural Society, xiv.) London: 117, Victoria St. 1892. 8vo, pp. 558. Price 15s. 6d.

Our information in England as to the best methods of rearing timber for profit, as well as our knowledge of its life-history and conditions in health and disease, comes to us almost entirely from the Continent. This fact does not reflect credit either on our foresters or economic scientists, and it was no doubt with a view of increasing the general interest, as well as of imparting instruction to

* See *Journ. Bot.*, 1882, 129, 284; *Report Bot. Record Club*, 1881-2, p. 216.

those who are engaged in the care of woods, that the Royal Horticultural Society arranged for a Conference on Conifers. The volume before us contains the report of papers read at that Conference. It may be divided into three parts:—(1st) Papers by scientific men who have specially devoted themselves to the study of forest trees; (2nd) papers written by practical foresters who by experience have gained a large amount of information about arboriculture; and (3rd) some lists of coniferous trees grown in the United Kingdom, to which is added a similar catalogue by Professor Carl Hansen of those of Denmark.

The first of these divisions, containing papers by Dr. Maxwell T. Masters, Professor Marshall Ward, Mr. W. T. Blandford, and Dr. A. W. Somerville, is in itself a short text-book on conifers. Dr. Masters begins his opening address with a brief history of the group from our knowledge of the remains in the Devonian rocks; he proceeds with a sketch of their method of growth, and concludes with some notes on the introduction of these trees into Great Britain and Ireland. He touches with pride on the fact that Douglas, Hartweg, and Fortune, who have done so much for the furtherance of the interest in Conifers in Britain, were Fellows and officers of the Horticultural Society. A necessary warning note is sounded on the danger of not keeping an adequate supply of timber in this country by failing to re-plant old forests when cut down, and not protecting those which exist.

The important subject of diseases of Conifers is dealt with by Professor Marshall Ward and Mr. W. H. Blandford, the latter of whom treats of those resulting from the attacks of insects. Dr. Ward considers each class of Conifers separately, and describes the attacks from which they suffer, both from the presence of parasitic fungi and also from disturbing actions of the inorganic environment. Special notice is taken of the alarmingly prevalent larch-canker, and a short account is given of the ascomycetous fungus (*Dasyscypha Willkommii*) causing it. The writer mentions as a prevention of this malady the planting of sound trees, but whether by that he means the use of what nurserymen term "healthy seed," or merely seeing that the young plants have no canker spots when planted out in the woods, does not appear. This point as to the belief which is so very general among foresters, that the canker is fostered and intensified by the propagation of young plants from seed produced by diseased trees, is noticed in a most valuable paper—both from a scientific and practical point of view—by Dr. A. W. Somerville, who thinks that it is only held by those who ignore the fungoid character of the disease, and very justly says that until we have proof that the seed contains the mycelium or spores of the fungus, we cannot regard it as the means of extending the disease. Dr. Somerville's article is full of the most useful methods to be employed in order to obtain the best quality of timber, and the reasons for all these methods are given in a way which must make their advantage clear to all practical readers.

Among the papers by practical men there is one by Mr. A. D. Webster, who is a believer in the planting of "good seed" as a

remedy for larch disease. He thinks that "induced tenderness in the constitution of the larch is the primary cause of disease, cold winds and frosts the destroying agents, and ulceration the direct consequence." It is curious, after the life-history of the fungus causing this disease has been so fully described both in Germany and later in England, that a paper read before a scientific society should entirely ignore these investigations.

An article rather differing from the last mentioned is that of Mr. E. J. Baillie, which charmingly describes the decorative characteristics of Conifers in language which is not prosaic enough to find a place in the more matter of fact economic parts of the volume, though the suitability of Conifers for landscape gardening is treated also by Mr. G. Nicholson in a short and instructive paper. Among other papers of interest may be mentioned an article on Japanese Conifers from the pen of Mr. H. J. Veitch, whose firm has done so much good work in the introduction of members of this group to England.

The latter half of the report contains a list of all the Conifers and Taxads cultivated in Great Britain, with their synonyms by Dr. Masters. We note that Torrey is given as the authority for *Sequoia gigantea*, but from the recent writings of Sereno Watson we know that Decaisne was the first to give this name to the mammoth tree. The volume closes with a most interesting record of the finest trees in Great Britain and Ireland, with statistics of their age, size, and height. Much interesting information can be gained by studying these tables. We find that *Cupressus macrocarpa*—which is a native of a restricted belt of sea-coast in California—flourishes vigorously in Orkney, notwithstanding the stormy winds and saline breezes of that bleak country. The tallest tree recorded is the Douglas Fir at Dropmore, which is 61 years old, with a height of 120 feet; a yew tree with a girth of 13 feet at an age of 400 years, at Rossdhu, Sir James Colquhoun's park, in Dumbartonshire, is mentioned.

It is a pity that the question of nomenclature was not taken in hand. It would have been a great gain if—among the other work done at this Conference—the multifarious synonymy of Conifers, which has always been an annoyance to workers, could have been put straight. The report, as a whole, reflects great credit on the labours of its editors, the Rev. W. Wilks and Mr. John Weathers.

J. B. CARRUTHERS.

La Truffe. Par AD. CHATIN (Baillière et Fils, Paris, 1892, pp. xii., 370, 8vo, 15 tab. col. Price 14 fr.).

IT is but four years since a handy little volume bearing this title was issued by the same publishers in their *Bibliothèque Scientifique Contemporaine*, viz., *La Truffe*, by M. Ferry de la Bellone. M. Chatin's volume is larger, much more exhaustive, and of a more definitely scientific character, and deserves a cordial welcome from students of the truffle. Since the late Mr. Broome, no one in this country seems to have taken up the *Tuberaceæ* as a special study, and it may be of service to throw

out the suggestion here that the order offers many attractions to a botanist in the southern counties having sufficient leisure to undertake a small, well-marked group. Truffle hunting is not without its excitements, whether pursued in the company of dog, pig, or by the unaided human instinct; and there is always the subject of truffle-culture for experiment, with a glittering reward for the practically successful.

This volume is a second edition of one published in 1869, and is a great advance on the original. It is professedly not written specially for savants, "mais pour tout le monde," Nevertheless, it does not fail in exact information and in minute information such as savants demand, while at the same time it is written, as scientific books so seldom are, in such fashion as to interest all who choose to read. In this respect, indeed, it is a very happy effort on the part of the author. He begins with a history of truffles from the piping times of Theophrastus onwards, and then describes in detail the species of *Tuber*, *Terfezia*, *Tirmania*, an Algerian genus so named by the author, and *Gautieria graveolens*, the Mexican truffle. In the next chapter the trees and other vegetation favourable to the production of truffles are discussed, then the nature of the soil and atmospheric conditions, climate, countries productive of truffles, &c. The development of truffles, signs of their existence, culture in its widest conditions, collection by aid of pigs, dogs, or singlehanded, are interestingly treated of, and the commercial statistics, alimentary and other qualities, chemical analyses, adulterations, methods of preservation and of cooking, and even the jurisprudence of the subject, are not forgotten. A very useful bibliographical index is to be found at the end of the volume. The plates are excellently done, and the whole book is well printed —wonderfully well considering its moderate price.

One cannot conclude without expressing a wish to see our own scientific popular literature attain a quality of the kind reached in this book, which gives in clear intelligible language a thoroughly good account of its subject, without any of the extraneous marvels or dissolving views of the universe so stupidly considered necessary for the British public.

G. M.

Samos: Étude Geologique, Paléontologique, et Botanique, par le professeur Carlo de Stefani, le docteur C. J. Forsyth Major, et William Barbey. Avec 13 planches par Ch. Cuisin. Lausanne: G. Bridel. 1892. 4to, pp. 99.

In this beautifully printed volume we have a complete enumeration of the flowering plants and ferns of Samos, to which are added three mosses. A prefatory bibliography and an enumeration of "documents botaniques" acquaint us with what has previously been done in the way of investigating the island. The first botanist to land on the island was Tournefort, but this was in January, a season by no means favourable to vegetation, although the authors think that a careful examination of Tournefort's herbarium would show some result of his visit. Sibthorp mentions some Samos plants, and Dumont d'Urville in 1819 collected 62 species there.

With the exception of a paper by the Rev. H. F. Tozer, published in the *Academy* in 1886, nothing further seems to have been done until Dr. Forsyth Major made three visits in 1886–8, the results of which form the basis of the present volume.

Two new species—*Corydalis integra* and *Erodium Vetteri*—are described by Messrs. Barbey and Major, and a new *Rubus*—*R. Ægæus*—by M. Louis Favrat. The flora as a whole does not materially differ from that of the neighbouring islands. A word must be said in praise of the very beautiful plates, on which are figured the above-mentioned novelties, and some of the more interesting species.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (Nos. 5–8). — G. Holle, 'Zur Anatomie der Saxifrageen und den systematische Verwerthung' (concl.).

Bot. Gazette (Jan.). — J. D. Smith, 'Undescribed plants from Guatemala' (*Sloanea pentagona*, *Xanthoxylum foliolosum*, *Ouratea podogyna*, *Hauya Rodriguezii*. *H. Heydeana*, *Bumelia pleistochasia*, *B. leiogyna*, *Styrax conterminum*, *Ehretia Luxiana*, *Juanulloa Sargii* (1 plate), *Tynanthus guatemalensis*, *Schlegelia cornuta*, *Ægiphila falcata*, spp. nn.). — F. B. Maxwell, 'Roots of *Ranunculaceæ*.'— G. F. Atkinson, 'Texas Root Rot of Cotton.' — D. H. Campbell, 'A vacation in the Hawaiian Islands.'

Bot. Notiser (häft 1).—N. Wille, 'Mycologiske Notiser.'—A. A. Lindström, 'Bogsta sockens Fanerogamer och Ormbunkar.' — K. Starbäck, 'Sphæriaceæ imperfecte cognitæ.' — G. Lagerheim, '*Phæocystis*, nov. gen., grundadt frä *Tetraspora Poucheti* Harv.'

Bot. Zeitung (16 Jan.). — W. Grütter, 'Ueber den Bau und die Entwickelung der Samenschalen einiger Lythrarieen' (1 plate).— (Feb. 16). 'F. Hildebrand, 'Ueber einige Fälle von Abweichungen in der Ausbildung der Geschlechter bei Pflanzen.' — F. Kienitz-Gerloff, 'Protoplasmaströmungen und Stoffwanderung in der Pflanze.'

Bull. Soc. Bot. France (xxxix, Comptes rendus 5: Feb. 1).— A. Franchet, 'Les genres *Ligularia*, *Senecillis*, *Cremanthodium*, et leurs espèces dans l'Asie centrale et orientale.'—D. Clos, 'Du genre *Rhinanthus* et du *R. Crista-galli*.'—M. Gandoger, 'Note sur l'*Erigeron frigidus*.' — A. Chabert, 'Quatrième Note sur la flore d'Algérie.'— J. A. Battandier, 'Sur quelques plantes récoltées à Biskra' (*Echium horridum*, sp. n.). — L. Trabut, 'Herborisation dans le massif de l'Aurés.'

Bull. Torrey Club (Jan.). — W. W. Rowlee, 'Akenes and Seedlings of Compositæ' (5 plates).—A. A. Heller, '*Asplenium Bradleyi*.' —H. H. Rusby, '*Senecio Robbinsii*' (1 plate).

Erythea (Feb.). — T. Howell, 'Rearrangement of American *Portulaceæ*.' — E. L. Greene, 'Observations on *Compositæ*.' — S. B. Parish, 'Morphological Notes.'—'Plant Dispersion by the Buffalo.' —J. G. Lemmon, 'Notes on Western *Coniferæ*.'

Gardeners' Chronicle (Feb. 11).—H. Boscawen, 'Banier Island, N. Zealand.'—J. G. Baker, 'Synopsis of *Canna*' (contd.).

Journal de Botanique (Feb. 1). — L. Mangin, 'Recherches sur les Composés pectiques' (contd.). — J. Vesque, 'La tribu des Clusiées' (contd.). — J. Müller, 'Lichenes neo-caledonici a cl. B. Balansa in Nova Caledonia lecti.'

Journ. Linn. Soc. (Bot. xxix., No. 203: Jan. 25). — F. N. Williams, 'Monograph of *Dianthus*.'

Oesterr. Bot. Zeitschrift. (Feb.), — J. Lütkemüller, 'Beobachtungen über die Chlorophyllkörper einiger Desmidiaceen' (2 plates: concl.). — P. Ascherson, '*Sparganium neglectum*' (concl.). — P. Magnus, 'Ueber das monströse Auftreten von Blätten und Blättbüscheln au Cucurbitaceenfrüchten' (1 plate). — V. Schiffner, 'Bemerkungen über die Terminologie.' — A. v. Degen, '*Centaurea affinis* Friv. & *Linum thracicum* Griseb.' — E. v. Halácsy, *Centaurea Formanekii*, sp. n. — A. Hansgirg, 'Ueber *Chætosphæridium Pringsheimii* & *Aphanochæte globosa*.'

BOOK-NOTES, NEWS, &c.

The "fifth edition, revised and augmented," of the Guide to Miss North's paintings at Kew has recently been published. The "revision" is mainly confined to an alteration in the title and cover, from both of which Mr. Hemsley's (the author's) name is now omitted. The only "augmentation," save for a biographical notice of Miss North, transferred without acknowledgment from this Journal for 1890, is in the price, which has been raised from 4d. to 6d.

We regret to see that Sir Joseph Hooker (*Bot. Mag.* t. 7277) employs (and justifies the use of) *Stevensonia* as the generic name of the palm which is properly styled *Phoenicophorium*. The matter was dealt with in this Journal for 1865, p. 353, where it was clearly shown that *Stevensonia*, a *nomen nudum* applied to this and a palm of another genus by James Duncan in his Catalogue of the Mauritius in 1863, could not stand. The fact that *Stevensonia* "had been retained in all the 'Kew Guides'," and that Prof. Bayley Balfour said in 1877 (*Flora of Mauritius*, 388) that *Phoenicophorium* "should surely be suppressed," on purely sentimental grounds, cannot be allowed to supersede the law of priority, and even the authority of the *Genera Plantarum* is not sufficient to justify such a course. We are glad to see that M. Durand, in his *Index*, retains the proper name, *Phoenicophorium*. The palm, as is well known, owes this name to its having been stolen from Kew Gardens by an *employé* whom Mr. John Smith, then Curator, declares to have been a German. It is a little amusing to find that in this Journal (1865, 354), then under Dr. Seemann's management, the blame is transferred to "an Irishman."

Mr. Jackson's great *Index* continues to progress steadily, and with as much rapidity as the nature of the work will allow. It is

now printed off as far as the beginning of E; up to the end of D it occupies 807 quarto pages of three columns each.

The *Report of the Felsted School Natural History Society* for 1891 and 1892 contains a long list of "British plants"—the term is understood in its widest sense—which are grown in the Society's "weed garden," with some notes upon their permanence or otherwise. Such a garden as this is a very useful adjunct to the knowledge of our Flora, and should be associated with every school Natural History Society.

Mr. Scott Elliot has published the second part of his *Flora of Dumfriesshire*, the first instalment of which we noticed in this Journal for 1891 (p. 383). The present issue brings the work down to the end of *Rhamnaceæ*. The help of some additional contributors, indicated by curious abbreviations, is acknowledged. We are not clear whether the plant or the finder is referred to as a "railway passenger" (p. 3—for the paging begins *de novo* in this part!); but we are sure that the occurrence of *Viola cornuta* at Dumfries station is unworthy of record. *V. lactea* seems a very unlikely plant for the district.

The number of the *Kew Bulletin* dated January, but issued in the middle of February, contains a continuation of 'New Orchids,' and of the 'Decades Kewenses.' Among the latter we notice two species of *Stachys*, which were distributed by Messrs. MacOwan (who writes his name thus, not "McOwan," as in the *Bulletin*) and Bolus in the 1890 distribution of their 'Herbarium Austro-Africanum.' Such distribution constitutes a publication according to Art. 42 of the DeCandollean Laws, and the species in question date from 1890, not from 1893, as would appear from the *Bulletin*. We learn from the same source that Mr. Thomas Hanbury has presented to Kew some thirty volumes, mostly treating of economic or medical botany, from the library of his brother, Daniel Hanbury. Among these is the rare first edition of the *Liber Serapionis* (1473), a copy of which was secured some time since for the National Herbarium by Mr. Carruthers, who purchased it from a bookstall at the cost of a few shillings. The *Bulletin*, by the way, states that this edition is omitted by Pritzel, but this is not the case, though he gives 1475 instead of 1473 as the date of publication.

The *Botanische Zeitung*, which has completed its fiftieth year, has adopted a new departure in its form of issue. Hereafter it will appear in two sections—one devoted to original memoirs, the other to reviews, personal notices, &c. A special number will be devoted to the history of this important journal, and an index to the fifty volumes is in preparation.

The Department of Public Instruction at Sydney has issued part i. of *A Bibliography of Australian Economic Botany*, by Mr. J. H. Maiden (price 1s.). "All papers and works which consist of 'pure' botany" are omitted. It is well printed and indexed, and cannot fail to be very useful.

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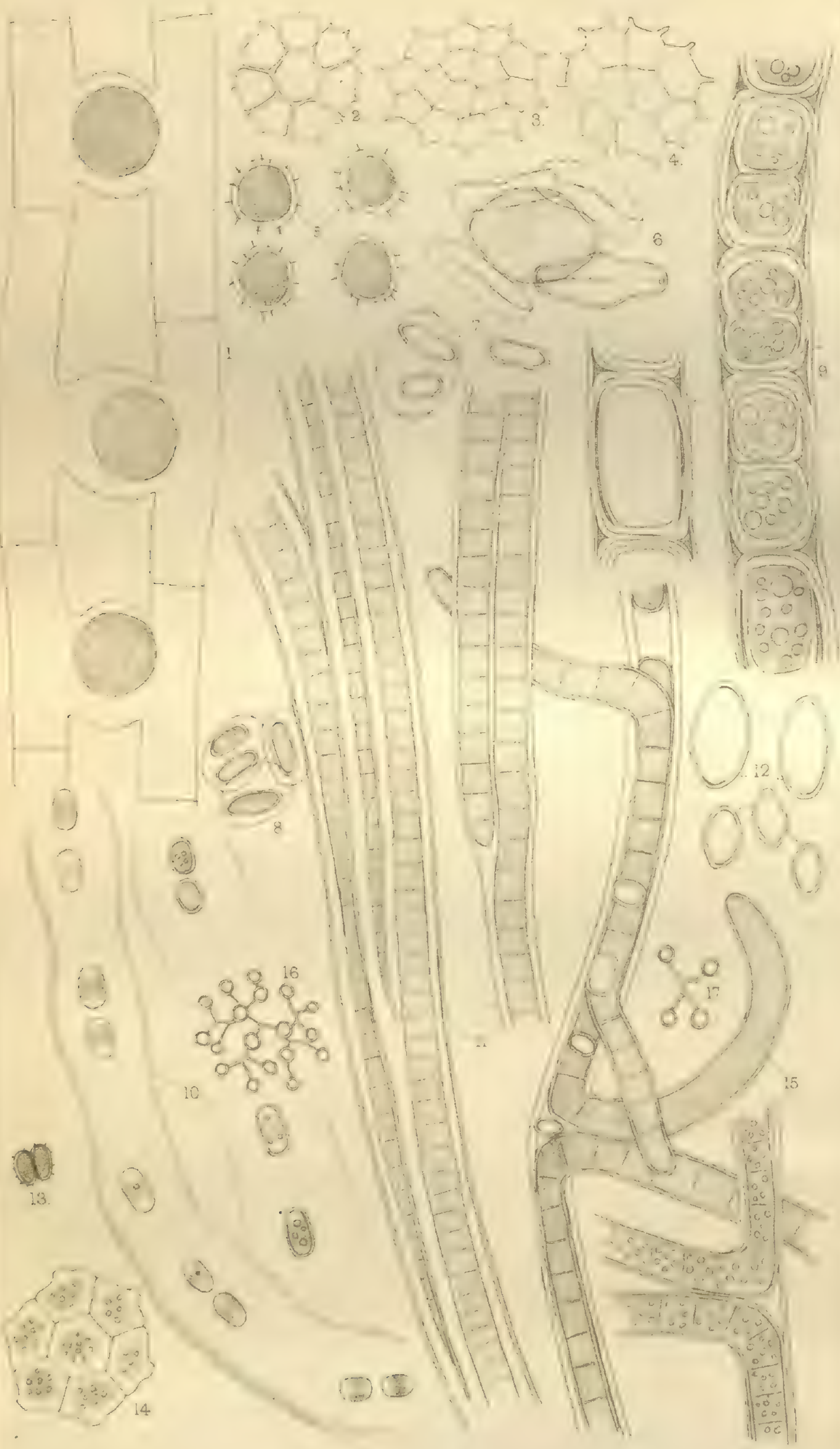

G. S. West ad nat. del.
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Scotch Freshwater Algae

NOTES ON SCOTCH FRESH-WATER ALGÆ.

By William West, F.L.S.

(Plate 333).

During a short botanical tour about some of the mountains of Scotland, in July, 1889, I made a large number of gatherings of Algæ; I had also collected some in August, 1880; Mr. J. McAndrew, of New Galloway, collected certain plants at my request, the washings from which were rich; and Mr. E. Naylor, of Bradford, made a gathering in the Orkneys. An examination of these collections has resulted in a fair list of species, many of them not having been recorded before as British.

During the preparation of this list, I ascertained that Mr. J. Roy, of Aberdeen, was preparing a list of the Desmids of Scotland; I therefore handed over to him a list of those I had noted, about 200 in number, several of which were new species; most of the remainder I learnt had been observed from Scotland before by Mr. Roy.

Washings and squeezings of *Myriophyllum*, *Hypnum trifarium*, *H. scorpioides*, *Sphagnum contortum*, *Nardia emarginata*, and similar aquatic plants were prolific in the smaller species. Some of the gatherings were made at elevations of above 3000 ft., and the majority were made among the hills at altitudes between 1000 and 3000 ft. Those species that are hitherto unrecorded for Britain are prefixed by an asterisk. Those species that were observed from all or nearly all the localities visited are marked frequent.

My son, G. S. West, has been of the greatest assistance to me during the preparation of this paper, and the plate is entirely his work.

As the following names of localities are of frequent occurrence, they are contracted as follows:—

B. = Ben Lawers.
C. = Craig-an-Lochan.
G. = Carn-na-Glasha.
Gm. = Glas Maol.
M. = Meal Odhar.
N. = New Galloway.
S. = Glen Shee.
T. = Glen Tilt.

I.—Algæ.

Class *Confervoideæ Heterogameæ*.

Ord. Œdogoniaceæ.

Œdogonium Itzigsohnii De Bary, var. minor, nov. var. Var cum cellulis angustioribus et oosporis minoribus. Crass. cell. veget. 6–6·5 μ; altit. 8–11 plo major; crass. oogon. 30 μ; altit. 28–30 μ; crass oospor. 18–20 μ; altit. 18–20 μ. Orkney Is.

Œ. platygynum Wittr. S.

Œ. sp. Aberdeen. Crass. cell. veget. 10–12·5 μ; altit. 6–7 plo major; crass. oogon. 24 μ; altit. 40 μ; crass. oospor. 20 μ; altit. 30 μ.

Class *Confervoideæ Isogamæ.*

Ord. Confervaceæ.

Conferva pachyderma Wille. N., Orkney Is.

C. bombycina Ag., f. *genuina* Wille. B., Ben Nevis, Ben McDhui, Aberdeen.—f. *minor* Wille. B., C., Gm., Ben Nevis, Orkney Is.

C. floccosa (Vauch.) Ag. Orkney Is.

C. Raciborskii Gutw. (*La Nuova Notarisia*, 5 Aprilo, 1892, p. 17). S., N. Perhaps this species may be but a large form of *C. Löfgrenii* Nordst. (*Alg. Exsic.* No. 421, p. 17), but the specimens examined are nearer the plant described by Gutwinski. Lat. 24–25 μ; crass. membr. 4–5 μ. Fig. 9.

Cladophora glomerata (L.) Kütz. S., Glen Lochaidh.

Draparnaldia glomerata (Vauch.) Ag. B.

D. plumosa (Vauch.) Ag. Glen Lochaidh.

Ord. Ulotrichaceæ.

Hormiscia zonata (Web. et Mohr.) Aresch. T.

H. moniliformis (Kütz.) Rabh. G.

Ulothrix tenerrima Kütz. M.

Class *Conjugatæ.*

Ord. Mesocarpeæ.

Mougeotia nummuloides (Hass.). B. Crass. cell. veget. 13·5–15 μ; diam. spor. 28–37 μ.

**M. gelatinosa* Wittr. in Wittr. et Nord. *Alg. Exsic.* No. 957, p. 26. Crass. cell. veget. 15–16·5 μ; long spor. 42–47 μ; lat. spor. 33–36 μ. Glen Lochaidh.

M. recurva (Hass.), var Scotica, nov. var. Fig. 1. Var. paullo major, canalibus copulationis multe inflatis. Crass. cell. veget. 17·5–21 μ; diam. spor. 25–28 μ. Glen Tummel. The conjugating canal is distinctly visible all round the spore, as in *M. Minnesotensis* Wolle and *M. divaricata* Wolle.

Ord. Zygnemaceæ.

Spirogyra varians (Hass.) Kütz. G. Crass. cell. veget. 30 μ; long zygosp. 50–56 μ; lat. zygosp. 34–36 μ.

Zygnema sp. (ster.). Killin. Crass. cell. veget. 20–24 μ; long 1½–4-plo major. Several attempts at lateral conjugation were seen, but no mature zygospores.

Z. sp. (ster.). C. Crass. cell. veget. 25–26 μ; long 1¼-plo major.

Z. sp. (ster.). C., B. Crass. cell. veget. 33–37 μ; long 1–1½-plo major.

Class *Cœnobieæ.*

Ord. Pandorineæ.

Pandorina morum Müll. C.

Ord. Pediastreæ.

Pediastrum angulosum (Ehrnb.) Menegh. N.

P. Boryanum (Turp.) Menegh. B., S., Aberdeen.—Var. *granulatum* (Kütz.) A. Braun. C., S.

P. bidentulum A. Braun. Aberdeen.

P. duplex Meyen. (*P. pertusum* Kütz.). C., S.

P. tetras (Ehrnb.) Ralfs. S.

P. tricornutum Borge (*Chlorophfran Norska Finmarken*. p. 4, f. 3). Diam. cœnob. 37–40 μ; diam. cell. 13–15 μ. Glen Tummel (1880). Fig. 2.

P. integrum Näg. B. Fig. 4.

**P. Sturmii* Reinsch (*Die Algenflora mitt. Theil. von Franken*, p. 90, taf. 7, f. 1). Forma aculeis brevioribus. Diam. cœnob. (c. acul.) 52 μ; diam. cell. 10 μ. Fig. 3. Ben Laoigh.

Ord. Sorastreæ.

Sorastrum spinulosum Näg. M.

Staurogenia rectangularis (Näg.) A. Br. S. Long. cell. 5–7·5 μ; lat. cell. 3·5–6 μ.

Cœlastrum sphæricum Näg. Aberdeen.

C. cambricum Arch. Aberdeen. Diam. cœnob. 42–50 μ; diam. cell. 19 μ. Fig. 14.

C. microporum Näg. S.

C. cubicum Näg. Aberdeen.

II.—Protophyta.

Class *Protococcoideæ*.

Ord. Eremobieæ.

Ophiocytium cochleare (Eichw.) A. Br. N., Aberdeen.

Hormospora mutabilis Bréb. C.

Dictyosphærium Ehrenbergianum Näg. C. — Var. minutum, nov. var. Figs. 16 & 17. Var. cellulis minutis globosis. Diam. cell. 3–3·4 μ. C.

Nephrocytium Agardhianum Näg. S., M.

N. Nägelii Grun. M., Glen Lochaidh.

Oocystis solitaria Wittr. B., G., M., Orkney Is., Aberdeen. Long. 15–20 μ; 27·5–32·5 μ; lat. 9·5–11 μ; 13·5–17·5 μ. Fig. 12.

O. Nägelii A. Br. S., Ben Chiurn. Long. 28–30 μ; lat. 17 μ. This is somewhat smaller than the published dimensions of this species, and may be *O. geminata* Näg., which only appears to differ from the former in always being in pairs, and in its smaller size. In the specimens observed the cells were in pairs; we do not know of any published dimensions of *O. geminata* Näg.

O. apiculata, nov. sp. Figs. 7 et 8. O. in familias e 2–4 cellulis formatas consociatis, oblongis, diametro duplo longius, subapiculatis et incrassatis ad unumquemque polum. Long. cell. 11–15 μ; lat. cell. 5–6 μ; diam. fam. 2-cell. 22–24 μ. Orkney Is.

The nearest species to this is *O. Noræ Semliæ* Wille (*Ferskv. Alg. fra Nov. Sem.* p. 26, t. 12, f. 3 et 4); it differs in being rather more than twice as long as broad, and in its more *oblong* shape, with thickened pointed ends.

Ord. Protococcaceæ.

Pleurococcus vulgaris Menegh. Ben Lawers, &c., common.

Trochiscia paucispinosa, nov. sp. Fig. 5. T. parva, cellulis solitariis vel in familiis parvis associatis, subglobosis vel leve sub-

angularibus; membrana cellularum crassa, aciculis brevibus paucis (peripheriicis 7–14) ornata. Diam. sine acul. 15–17 μ; diam. cum acul. 18–20 μ; crass. membr. 1·5–2 μ. B.

T. insignis (Reinsch) Hansg., f. *minor*. Orkney Is. Diam. cum proc. 28 μ.

Chlorococcum gigas Grun. Frequent.

C. frustulosum (Carm. ?) Rabh. B.

C. humicola (Näg.) Rabh. C.

Glœocystis ampla (Kütz.) Rabh. B., C., S. Orkney Is.

G. vesiculosa Näg. B., C., Aberdeen, Glen Tummel.

G. rupestris (Lyngb.) Rabh. B., Orkney Is.

Schizochlamys gelatinosa A. Br. B.

Palmella mucosa Kütz. C.

P. hyalina Bréb. S.

Eremosphæra viridis De Bary. B., C., N., Glen Lochaidh.

Botryococcus Braunii Kütz. C.

Urococcus insignis (Hass.) Kütz. N., Aberdeen, Orkney Is.

Palmodactylon sp. S. The plant observed might have been referred to *P. subramosum* Näg., but the cells varied from subglobose to elliptical. Long. cell. 5–6 μ; lat. cell. 4–5 μ.

Rhaphidium polymorphum Fres., var. *aciculare* (A. Br.) Rabh. S. —Var. *falcatum* (Corda) Rabh. B., S., C.

**Geminella interrupta* (Turp.) Lagerh. (*Bidrag till Sveriges Alg. Flor.* t. 1, figs. 1–35). Long. cell. 11–15·75 μ; lat. cell. 6–8·75 μ. Fig. 10. Glen Tummel.

Scenedesmus bijugatus (Turp.) Kütz. C.

S. alternans Reinsch. C.

S. denticulatus Lagerh., var. *linearis* Hansg. (var. *lineatus* West). S., Ben Chiurn.

**S. aculeolatus* Reinsch., forma *brevior*. Fig. 13. Forma cum cellulis brevioribus quam forma typica. Long. cell. (c. spin.) 10 μ; long. cell. (s. spin.) 8 μ; lat. cell. 5 μ. C.

S. quadricauda (Turp.) Bréb. B., C., Edinburgh Botanical Gardens.

S. acutus Meyen. Frequent.—Var. *obliquus* (Turp.) Rabh. B., C.

Tetraëdon minimum (A. Br.) Hansg. Aberdeen.

T. enorme (Ralfs) Hansg. B.

Class *Phycochromaceæ*.

Sub-class *Nostochineæ*.

Ord. Nostocaceæ.

Nostoc Linckia (Roth) Bornet. A form with trichomes and heterocysts rather stouter than in the type. Diam. cell. 3·5–4·5 μ; diam. heterocyst. 6·5–7·5 μ. B.

N. sphæricum Vauch. B., C.

N. microscopicum Carm. (*N. hyalinum* Benn.). B.

Anabæna sp. B. The material was insufficient for determination. The filaments were straight, with cells oblong, and one and a half times longer than broad; spores cylindrical, straight (or very slightly curved), with rounded ends. Crass. cell. 5 μ; long. spor. 40–46 μ; lat. spor. 12–14 μ.

A. sp. Ben Laoigh. Crass. cell. 5·5–7 μ; crass. heterocyst. 10 μ.

Ord. Rivulariaceæ.

**Dichothrix Nordstedtii* Born. et Flah. (Revision des Nostocacées Hétérocystées, *Ann. des Scien. Natur.* 7e sér. tom. 3, p. 374). Crass. fil. 12–15·5 μ; crass. trichom. 6·5–8 μ. Fig. 11. B., T., Ben McDhui. On dripping alpine rocks. This species seems to be well marked by the total absence of heterocysts.

Glœotrichia Pisum (Ag.) Thuret. Orkney Is. Crass. fil. 9–10 μ; crass. trich. 6 μ.

Ord. Scytonemaceæ.

Tolypothrix distorta Kütz. Ben Chiurn. Crass. fil. 11·5–13 μ; crass. trich. 5–7·5 μ; crass. heterocyst. 6·5 μ.

**Scytonema tolypotrichoides* Kütz. B. Crass. fil. 15–16·5 μ; crass. trich. 10–11 μ; crass. heterocyst. 10 μ. Fig. 15. The cells were mostly subquadrate, but some of the younger specimens had the cells up to four times as long as broad, the heterocysts being very variable, and the younger sheaths constantly hyaline.

S. figuratum Ag. Ben McDhui. Crass. fil. 20–23 μ; crass. trich. 5–7·5 μ; heterocyst. 15–18 × 10 μ. This occurred mixed with *Stigonema turfaceum* Cooke.

Ord. Sirosiphoniaceæ.

Stigonema panniforme (Ag.) Born. et Flah. Glen Tummel.
S. turfaceum Cooke. Ben McDhui, Orkney Is.

Ord. Oscillariaceæ.

Oscillaria Frölichii Kütz. B., Ben Laoigh.
O. nigra Vauch. B., C., Ben Chiurn.
O. tenuis Ag., var. *viridis* Kütz. B.
O. leptotricha Kütz. C.
O. tenerrima Kütz. S., C.
Lyngbya inundata (Kütz.). C.

Süb-class *Chroococcaceæ*.

Ord. Chroococcaceæ.

Chroococcus minor (Kütz.) Näg. B.
C. pallidus (Näg.). Ben Chiurn.
C. turgidus (Kütz.) Näg. Very frequent.
C. cohærens Näg. C., Corrie Ceandor, Aberdeen.
Glœocapsa polydermatica Kütz. B.
G. rupestris Kütz. C.
Synechococcus æruginosus Näg. B.
Merismopedia glauca (Ehrnb.) Näg. S., C., Glen Tummel.
M. irregulare Lagerh. S. Diam. cell. 2–2·5 μ.
Aphanocapsa rivularis (Carm.) Rabh. B., Gm.
A. Grevillei (Berk.) Rabh. Forma cum cellulis dispersioribus quam in forma typica. Lat. famil. 38–42 μ; lat. cell. 3 μ. Ben Chiurn.
Microcystis protogenita (Bias.) Rabh. C., Glen Tummel.
Aphanothece microscopica Näg. Aberdeen.

A. saxicola Näg. B., C., Glen Tummel, Ben Laoigh.
Cœlosphærium Kützingianum Näg. B., C.
Gomphosphæria aponina Kütz. B.

Class *Diatomaceæ.*

Cyclotella operculata (Ag.) Kütz. Glen Tummel, Orkney Is.
Melosira varians Ag. B., G., Edinburgh Botanical Gardens, Aberdeen.
M. granulata (Ehrnb.) Pritch. C.
Surirella linearis W. Sm. B., G.
S. biseriata (Ehrnb.) Bréb. B., G., Gm.
S. splendida (Ehrnb.) Kütz. Ben Chiurn.
Cymatopleura elliptica (Bréb.) W. Sm. Aberdeen.
C. Solea (Bréb.) W. Sm. S.
Epithemia turgida (Ehrnb.) Kütz. B., S., M., Corrie Ceandor, Ben Laoigh.
E. Westermanni (Ehrnb.) Kütz. S., C., Ben Chiurn.
E. Hyndmanni W. Sm. S.
E. gibba (Ehrnb.) Kütz. Frequent.
E. ventricosa Kütz. S.
E. Zebra (Ehrnb.) Kütz. B., S.
E. gibberula (Ehrnb.) Kütz., var. *rupestris* (W. Sm.) Rabh. N., Gm., Ben Chiurn.
E. Argus (Ehrnb.) Kütz. B., T., C.
E. alpestris W. Sm. B., C., S., G., T.
Eunotia incisa Greg. B., N.
E. Diodon Ehrnb. D.
E. Triodon Ehrnb. B.
E. Tetraodon Ehrnb. B., Gm., M., Ben Laoigh.
E. Pentodon Ehrnb. C.
E. Diadema Ehrnb. C.
E. Arcus Ehrnb. B., C., Gm., G.
E. majus W. Sm. Frequent.—Var. *bidens* W. Sm. N.
E. gracilis Ehrnb. C., M., N., Corrie Ceandor, Glen Lochaidh, Orkney Is.
E. monodon Ehrnb. G.
E. pectinalis Dillw. B., T., Corrie Ceandor. — Var. *undulatum* Ralfs. B., S., N., Corrie Ceandor.
E. Soleirolei Kütz. Corrie Ceandor.
Ceratoneis Arcus (Ehrnb.) Kütz. Corrie Ceandor, Glen Lochaidh, Ben Chiurn.
C. Amphioxys Rabh. S., T., M., Corrie Ceandor.
Cymbella cuspidata Kütz. C.
C. turgida Greg, S., C., M.
Cocconema lanceolatum Ehrnb. Common.
C. cymbiforme (Kütz.) Ehrnb. Common.
C. Cistula Hempr. S., B., M., T., Corrie Ceandor.
C. parvum W. Sm. S., C., G., Corrie Ceandor.
Encyonema cæspitosum Kütz. Glen Tummel.
Amphora ovalis Kütz. T.
Cocconeis Placentula Ehrnb. C., S., Corrie Ceandor.

C. Thwaitesii W. Sm. Very frequent. An auxospore was seen from Craig-an-Lochan (fig. 6). Long. auxosp. 34 μ; lat. auxosp. 24 μ.

Achnanthidium microcephalum Kütz. C.

A. lanceolatum Bréb. S., Glen Tummel, Ben Chiurn.

A. lineare W. Sm. C.

Achnanthes exilis Kütz. Common.

Denticula sinuata W. Sm. B., S., T.

Odontidium hyemale (Lyngb.) Kütz. B., Glen Lochaidh, Corrie Ceandor.

O. mesodon Kütz. B., C., T., G.

O. mutabile W. Sm. B., C., G., M., Aberdeen, Edinburgh Botanical Gardens.

Fragilaria capucina Desmaz. B., M., G., Corrie Ceandor.

F. virescens Ralfs. N.

F. construens (Ehrnb.) Grun. B., Ben Chiurn. — Var. *binodis* Rabh. C.

Diatoma vulgare Bory. S., G., Corrie Ceandor.

D. elongatum Ag. B., S., Corrie Ceandor, Edinburgh Botanical Gardens.

Synedra lunaris Ehrnb. Frequent.—Var. *undulata* Rabh. N.

S. biceps Kütz. N., Aberdeen.

S. pulchella Kütz. M., S.

S. minutissima (Kütz. ?) W. Sm. B., C., M., Glen Tummel.

S. Ulna Ehrnb. B., S., M., T., Glen Lochaidh, Corrie Ceandor.

S. splendens Kütz. Very frequent.

S. capitata Ehrnb. Edinburgh Botanical Gardens.

S. Acus Kütz. B., C.

Asterionella formosa Hass. C.

Amphipleura pellucida Kütz. B.

Nitzschia Amphioxys (Ehrnb.) W. Sm. B., Ben Chiurn.

N. sigmoidea (Nitzsch) W. Sm. B., Glen Tummel, Edinburgh Botanical Gardens.

N. linearis (Ag.) W. Sm. B.

N. tenuis W. Sm. S., N., Glen Lochaidh, Orkney Is.

Navicula rhomboides Ehrnb. Frequent.

N. serians (Bréb.) Kütz. C., N.

N. elliptica Kütz. Frequent. — Var. *cocconeoides* Rabh. Corrie Ceandor.

N. pygmea Kütz. [*N. minutula* W. Sm.]. T.

N. limosa (Kütz.) Grun., var. *bicuneata* Grun. C.

N. hebes Ralfs [*N. obtusa* W. Sm.]. T.

N. Amphisbæna Bory. Corrie Ceandor, Glen Tummel.

N. anglica Ralfs. C.

N. Semen Ehrnb. T.

N. rhynchocephala Kütz. Orkney Is.

N. affinis Ehrnb. B., Corrie Ceandor.

N. Amphirhynchus Ehrnb. B., Ben Laoigh.

N. producta W. Sm. S.

N. exilis (Kütz.) Grun. B., C.

N. angustata W. Sm. C.

N. cryptocephala Kütz. S., Orkney Is.
N. dicephala Ehrnb. C., Orkney Is.
Pinnularia nobilis Ehrnb. B., N., Aberdeen, Glen Lochaidh.
P. major Rabh. Frequent.
P, Rabenhorstii Ralfs. B.
P. Tabellaria Ehrnb., var. *acrosphæria* Rabh. C., Aberdeen.
P. gibba Ehrnb. C., N., M., Ben Laiogh, Aberdeen.
P. viridis (Ehrnb.) Rabh. Common.
P. alpina W. Sm. C., M., Gm., Corrie Ceandor.
P. radiosa (Kütz.) Rabh. C., Orkney Is., Aberdeen.
P. borealis Ehrnb. Ben Chiurn. Long 56 μ; lat. 12 μ; striis 10 in 25 μ.
P. acuta W. Sm. S.
P. mesolepta W. Sm. B.
P. divergens W. Sm. C., G., Gm., Corrie Ceandor, Ben Laoigh, Edinburgh Botanical Gardens.
P. Brebissonii (Kütz.) Rabh. Orkney Is.
Frustulia saxonica Rabh., forma *aquatica* Rabh. Frequent.
Stauroneis Phœnicenteron (Nitzsch) Ehrnb. Frequent.
S. anceps Ehrnb. C.
Gomphonema tenellum Kütz, T., S.
G. dichotomum Kütz. C., G., M., Gm., Glen Lochaidh.
G. Vibrio Ehrnb. S., C.
G. capitatum Ehrnb. S., C.
G. constrictum Ehrnb. S., M.
G. geminatum Ag. S., M., Glen Lochaidh.
G. acuminatum Ehrnb. Frequent.
G. olivaceum (Lyngb.) Kütz. B.
G. intricatum Kütz. G., Gm., T., Glen Lochaidh.
Meridion circulare (Grev.) Ag. G., M., T.
M. constrictum Ralfs. T.
Tabellaria flocculosa (Roth) Kütz. Common.
T. fenestrata (Lyngb.) Kütz. Frequent.
Tetracyclus emarginatus (Ehrnb.) W. Sm. M.

EXPLANATION OF PLATE 333.—Fig. 1. *Mougeotia recurva* (Hass.), var *Scotica*, nov. var. × 400. 2. *Pediastrum tricornutum* Borge. × 400. 3. *P. Sturmii* Reinsch forma. × 400. 4. *P. integrum* Näg. × 520. 5. *Trochiscia paucispinosa*, nov. sp. × 520. 6. *Cocconeis Thwaitesii* W. Sm., auxospore. × 520. 7 & 8. *Oocystis apiculata*, nov. sp. × 520. 9. *Conferva Raciborskii* Gutw. × 520. 10. *Geminella interrupta* (Turp.) Lagerh. × 400. 11. *Dichothrix Nordstedtii* Born. et Flah. × 520. 12. *Oocystis solitaria* Wittr. × 400. 13. *Scenedesmus aculeolatus* Reinsch, forma *brevior*. × 520. 14. *Cœlastrum cambricum* Arch. × 400. 15. *Scytonema tolypotrichoides* Kütz. × 400. 16. *Dictyosphærium Ehrenbergianum* Näg., var. *minutum*, nov. var. × 520. 17. Ditto, × 520.

NOTES ON THE BRITISH SPECIES OF *CAMPYLOPUS*.

By H. N. Dixon, M.A., F.L.S.

C. pyriformis Brid., var. *Mülleri* (*C. Mülleri* Jur.).—I find this form at Kingsthorpe, Northamptonshire, with the calyptra *quite entire* at the base, or, in a very few cases, very slightly lobed indeed. Leaves very deciduous; in the type they are rarely so, I think, to any great extent in the fertile plants, though the condition is a very prevalent one when barren.

C. fragilis B. & S.—In fruit, Poison Glen, Donegal, 1890.—A form, or state of this moss gathered at Ecclesbourne, near Hastings, has numerous ramuli crowded in tufts among the comal leaves, each bearing a number of small, undeveloped, hyaline leaves; giving to the plant a very peculiar facies.

C. Schimperi Milde.—There appears to be considerable diversity of opinion among authors concerning the characters of this plant, and of *C. subulatus* Schpr. (*C. brevifolius* Bry. Eur. Suppl.). Husnot makes *C. Schimperi* a variety of the latter species, an arrangement for which there certainly appears considerable justification. The characters usually relied upon to distinguish the two are (1) the stem tomentose above in *C. Schimperi*, with copious radicles even on the upper branch-leaves, while in *C. subulatus* the stems are devoid of tomentum; (2) the broader nerve in *C. Schimperi*; (3) the greater height of *C. Schimperi*, attaining to three inches as against about half an inch in *C. subulatus*; (4) the difference in nerve-section; that of *C. subulatus* showing two anterior strata of large hyaline cells, *C. Schimperi* having only a single row of these cells; (5) the presence or absence of basal auricular cells; (6) the straight seta in *C. Schimperi*.

The value of the character derived from the tomentose condition of the stem, as well as that of the relative size of the plants, is minimised by the fact that in the var. *elongatus* Bosw. of *C. subulatus*, which attains to one or two inches in height, the stems (though not the branches) are described as "copiously radiculose below." Specimens of *C. Schimperi*, moreover, gathered in 1890 in the north of Ireland (for the correct naming of which I have the authority of Mr. H. Boswell and others), have the stems entirely devoid of radicles except at the very base, where they are very few.

(2). The nerve is certainly somewhat variable in width in both species, and the difference between the two, even if that of *C. Schimperi* is constantly the broader, is far less than is often seen in leaves, even in those taken from the same plant, of *C. fragilis* or of *C. flexuosus*.

(4). I do not think much weight can be attributed to this character. Specimens of *C. Schimperi* from Rabenhorst's exsiccata show the anterior row of hyaline cells to be here and there doubled; while in authentic specimens of *C. subulatus* from Fern, near Brechin, I find this stratum to be distinctly composed of a single row, with two rows of small opaque cells at the back, and the same is the case with plants of the same species gathered in Belgium by Gravet.

(5). There is a remarkable diversity of opinion among authors as to the presence or absence of auricular cells in these species. With regard to *C. subulatus*, Schimper says, "auriculis excavatis nullis"; Braithwaite writes, "Leaves not auricled"; Hobkirk (*Synops. of Brit. Mosses*), "Leaves not auricled at base"; Boswell, in describing the var. *elongatus*, speaks of the "cluster of diaphanous vesicular cells (of *C. Schimperi*) near the base of the leaves on either side, absent in *brevifolius*." Husnot (*Musc. Gall.*) has "pas d'oreillettes distinctes." On the other hand, Boulay (*Muscinées de la France*) writes, "cellules basilaires un peu gonflées, le plus souvent incolorées, donnant lieu à des oreillettes semblables à celles du *C. brevipilus les moins caractérisées*." This latter condition is exactly what I find in specimens gathered by the Rev. J. Fergusson at Fern, while in Gravet's specimens and in plants of this species gathered in 1889 in the New Forest, I find the auricles even more distinctly developed, quite as much so as is sometimes the case even with *C. flexuosus*, and more defined than in any specimens of *C. Schimperi* that I have seen. Indeed, in original specimens of *C. brevifolius* var. *elongatus*, kindly sent me by Mr. Boswell himself, I find in the upper leaves especially most distinct tufts of vesicular basal cells, sometimes wider than the leaf-base, so as almost to deserve the name of auricles. The truth seems to be that in both plants there is the same variableness, in this respect, as is found in *C. brevipilus*, where the auricular cells are sometimes barely distinguishable, at others very highly developed.

(6). The straight seta certainly seems a point of more importance, but I am not aware that the fruit of *C. Schimperi* that has been found shows the young seta to be cygneous; if not, no conclusions can be drawn from it as to the relative standing of the plants in question. I am inclined to think, therefore, that Husnot is justified in reducing *C. Schimperi* to a variety.

The following are, I believe, new records for the two plants:—*C. subulatus*, near Lyndhurst, New Forest, 1889. *C. Schimperi*, Dalwhinnie, Inverness, 1883; Giant's Causeway, Co. Antrim, 1890. (Recorded doubtfully in *Journ. Bot.*, Dec. 1891, and since confirmed.)

C. flexuosus Brid.—Few writers call attention to the variable nature of this species, which is the most common and the most inconstant of the genus. Besides the vars. *paradoxus* and *paludosus*, there is to be found almost every conceivable variety of habit, colour, and form of leaf. I have in my herbarium plants of every shade of green, from pale yellowish to almost black; some in habit exactly similar to the most silky, delicate forms of *C. fragilis*, not half an inch high; others in fine tufts, as much as four inches in height, more robust and more tomentose than, but in other respects much like the var. *paludosus*; one with the leaves regularly falcate, and the aspect of a Dicranum; another almost identical in habit, colour and leaf-form, with the var. *falcatus* of *C. atrovirens*. The leaves vary from a short, rigid form, almost exactly as in *C. subulatus*, to another with long flexuose points, rarely becoming setose and hyaline, as in *C. setifolius*; they are sometimes entire, or very

nearly so, often serrated sharply for the whole length of the subula; sometimes flattened for a great part of the length of the leaf, at others becoming incurved and tubular from the base; the nerve varying from one-fifth to two-thirds the width of the leaf at base, often from a quarter to more than a half in the same plant; the auricles frequently most distinct, beautifully coloured, large, and wider than the rest of the leaf, but occasionally hardly at all developed; while similar variations occur in the areolation of the rest of the leaf-base.

A form from Doocharry Bridge, Donegal, deserves notice. With the habit and the shining leaf-bases of *C. fragilis*, it has the nerve from half to two-thirds the width of the leaf at base, and the point running out into a fine, slightly-toothed arista, which is sometimes hyaline; when dry, flexuose. The lid of the fruit, in the only specimen where it is retained, is short and conical, hardly rostellate, and not more than one-third the length of the capsule.

The var. *paludosus* seems to be of fairly general occurrence; I have found it, for instance, on Cynicht, N. Wales; near Lyndhurst in the New Forest; and on Gurnard's Head, W. Cornwall.

Var. *paradoxus*. — Helvellyn, 1891. Tyn-y-groes, Dolgelly, 1890. Walberswick, Suffolk, 1885.

C. atrovirens var. *epilosus* Braithw.—Penmaenmawr, 1892.

C. atrovirens var. *falcatus* Braithw.—Doocharry Bridge, Donegal, Growing in the same tuft with a fairly typical form, and with other stems showing various intermediate stages of the falcate condition.

C. brevipilus B. & S.—Also a very variable species. One form gathered in the New Forest, from its general habit and the unusually long hair-points, simulated *C. introflexus*. Another very pretty plant, of a dark bronze-green, with the hair-points almost obsolete, the auricles distinct (perhaps var. *auriculatus* Ferg.), and the leaves tubular from the base upwards, grew in almost the same spot.

This species appears to be rare in Wales, but I found it in 1888, near Llyn Idwal, Carnarvonshire.

BIBLIOGRAPHICAL NOTES.

I.—Ray's Herbarium.

The translation by Mr. Joseph Lucas of Kalm's *Account of his Visit to England* on his way to America in 1748 (selected from his *En Resa til Norra Amerika*) contains a passage which throws an interesting light upon the present condition of the Rayan Herbarium now preserved in the Botanical Department of the British Museum.

This Herbarium, as stated in this Journal for 1863, p. 32, was transferred from the Apothecaries' Company's Garden at Chelsea to the British Museum in 1862. It may be worth while, as many present readers of the Journal do not possess the earlier volumes,

which have long been out of print, to transcribe the account which was then given :—

"The herbarium of John Ray is still in existence. It was bequeathed by him to his friend Samuel Dale, apothecary, at Braintree, who was about forty-five years old at the time of Ray's death (1705), and survived him till the year 1739, when he left his books and plants as a legacy to the Apothecaries' Company. Suitable presses were erected for their conservation at Chelsea Gardens, under the direction of Sir Hans Sloane. Isaac Rand, the assistant, and in the end the successor to Petiver, as botanical demonstrator to the Company, was officially connected with the Gardens for more than twenty years before Dale's herbarium was deposited there. He was then making an extensive *hortus siccus*, which at his death was placed along with those of Ray and Dale. These three herbaria, containing collections of British and foreign plants, with the Rayan names attached, have remained ever since in suitable presses until lately, when, through the exertions of the Keeper of the Botanical Department of the British Museum, seconded by N. B. Ward, Esq., one of the Court of the Apothecaries' Company, they have been secured for our National Herbarium. The herbarium of Ray—certainly the most interesting memorial existing of that great and good man—is contained in 19 thin quarto or small folio fascicles, each characterized by a letter of the alphabet. The plants, most of them still in excellent condition, are sewn on the paper, and labelled in the peculiarly neat and plain handwriting of Ray. They are put together apparently without order, probably as they were collected. Accompanying them is a manuscript index, also in Ray's handwriting; it is entitled 'Horti Sicci Raiani Catalogus,' and contains an index to the fascicles as far as letter S, arranged alphabetically, in this manner, '*Cyclamen autumnale hederæ folio*, K. 4, M. 5, O. 8, S. 6.' The importance of this collection in determining precisely what are Ray's species cannot be over-estimated; and with those of Dale and Rand, both of whom helped Dillenius in his edition of Ray's 'Synopsis,' added to the collections of Sloane, Petiver, Sherard, Buddle, Richardson, and others, already in the British Museum, will supply ample materials to the committee of the British Association, consisting of Dr. Gray, Prof. Babington, and the Rev. W. W. Newbould, to prepare a valuable report on 'The Plants of Ray's *Synopsis Stirpium*' as determined by an examination of the original herbaria of Ray and others."

In the Journal for 1870, pp. 82–4, Dr. Trimen gives a further account of Ray's Herbarium, in the course of which he corrects one or two details, and supplies additional information. He says :—

"It consists of 20 books of different sizes, each containing about 30 sheets of thin rough paper, on which the specimens are sewn. The parcels are distinguished by letters of the alphabet, and a MS. alphabetical catalogue (apparently written by Dale, and not, as was stated in the [previous] notice, by Ray) gives references to all the specimens but those in the last three fasciculi, which, perhaps, do not form really a part of Ray's herbarium. The collection has been badly used; many of the specimens have been cut out. Probably, some of the labels, too, are in Dale's writing, which it is difficult always to distinguish from Ray's. There is no apparent order in the collection, the plants having probably been laid in as they were collected.

"The bulk of the species are European. Switzerland, Italy and Sicily are best represented: there are a few from Belgium, Holland and Germany. The extra-European species are probably from Continental gardens. Localities are not generally given, but many specimens from the Jura and Sicily are very definitely localized. There can be little

doubt that these were collected during Ray's foreign tour in the years 1663—1665, of which he has left us an interesting account in his 'Journey,' published in 1673, in which book lists of the plants found are given, which agree well with those in the 'Hortus Siccus.' These lists were afterwards extended and improved in the *Stirpium Extra Brit. Nasc. Sylloge* (1694). With these are a few British plants of which some have localities affixed."

These localities Dr. Trimen proceeds to quote, but I do not think it necessary to repeat them here.

With a view to the better preservation of this interesting relic, the leaves have been mounted upon sheets of stiff paper of a uniform size, and placed in solander cases, and are now easily accessible to students. The book lettered "T" is composed of Jamaica plants given to Ray by Sloane, and has names in the handwriting of the latter.

When laying out the sheets, the damage which the collection had suffered by the removal, sometimes of specimens of which the names remained, at others by portions of the sheets having been cut out, was very noticeable: and we owe to Kalm the explanation of the occurrence. In the translation of his *Visit to England*, which I have mentioned at the head of this paper (pp. 106–111), is an account of his visit to "the Chelsea Physick Garden, which," he says, "has, as regards herbs, one of the largest collections of all rare foreign plants, so that it is said in that respect to rival the *Botanic Gardens* of both *Paris* and *Leyden:* at least it is believed to overgo them in North American plants. It is laid out at Chelsea, a short English mile from London, because a great many plants cannot thrive in London for the coal-smoke." He proceeds:—

"In a room up in the Orangery there is preserved as a great rarity, the collection of plants which the great *Historicus Naturalis, Joh. Rajus* or *Ray* himself collected and arranged, and with his own hand wrote the names under. *Mr. Ray* presented this collection a week before his death, which took place the 17th January 1706, to his good friend and neighbour, *Mr. Samuel Dale*, author of the well known *Pharmacologia*. Mr. Dale afterwards in his old age gave them as well as his own collection of plants to the *Physic Garden* at *Chelsea*, to be preserved for ever. The plants in *Mr. Ray's* Herbarium were sewn with cotton on to the paper in large paper books. The whole collection consisted of about eight or twelve such paper books in folio. In some places the plants had been cut out, for *Dr. Sherard* had borrowed this collection from Mr. Dale, and when he had found any plant, which was either rare, or he thought much of, it was said that he had either clipped or cut it out, so that the books had been sufficiently mutilated."

Mr. Druce informs me that these plants cannot be traced in the Sherard's Collection at Oxford.

It is much to be regretted that the Report on "the Plants of Ray's *Synopsis*" never saw the light; there are few British botanists who could bring to such a task the knowledge and other qualifications which Mr. Newbould possessed in so eminent a degree.

JAMES BRITTEN.

A PROVISIONAL LIST OF THE MARINE ALGÆ OF THE CAPE OF GOOD HOPE.

By Ethel S. Barton.

(Continued from p. 84.)

Zonaria lobata Ag. Knysna, *Boodle*! Algoa Bay, *Ecklon*, *Areschoug*, *Holub*! *Port Natal, *Krauss*!

Geogr. Distr. Atlantic (Brazil, West Indies, Canaries).

Species inquirenda.

Z. marginata Suhr. (*? Dictyota*). Algoa Bay, *Ecklon*. Cape, *fide Agardh*. Agardh considers this a doubtful species of *Zonaria*. I have not been fortunate enough to see any specimen of the plant.

Padina pavonia Gaill. Port Natal, *Hb. Shuttleworth*!

Geogr. Distr. General in temperate and warm oceans.

Haliseris ligulata Suhr. Table Bay, *fide Areschoug*. Algoa Bay, *Ecklon*. From Algoa Bay to shores of Natal, *fide Areschoug*.

H. serrata Aresch. Port Natal, *Hb. Areschoug*!

H. dichotoma Suhr. Omsamculo, *Drege*. Port Natal, *Hb. Areschoug*! *Gueinzius*! Cape, *Drege*.

H. macrocarpa Aresch. Port Natal, *Hb. Areschoug*! *Gueinzius*!

H. polypodioides Ag. Algoa Bay and Port Natal, *Ecklon*. *Krauss*.

Geogr. Distr. Atlantic, West Indies, North Sea, Mediterranean, Tasmania.

H. delicatula Lam. Port Natal, *fide Areschoug*.

Geogr. Distr. Brazil and West Indies.

Ectocarpaceæ.

Ectocarpus parvulus Kütz. Cape Agulhas, *Hohenack.*! No. 364.

Geogr. Distr. Adriatic.

E. confervoides Le Jol. Kalk Bay, *Boodle*!

Geogr. Distr. Atlantic. Mediterranean.

E. simpliciusculus Ag. Kalk Bay, *Boodle*!

Geogr. Distr. Adriatic. St. Vincent, C. V. Britain.

E. siliculosus Lyngb. Cape, *Harvey*! *Tyson*! South Africa, *Drege*!

Geogr. Distr. Atlantic (from Faroe to Cape Horn), Australia, Mediterranean.

E. granulosus Ag. Cape, *Harvey*.

Geogr. Distr. North and South Atlantic. New Zealand.

Sphacelariaceæ.

Sphacelaria tribuloides Menegh. Port Natal, *Krauss*.

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* This specimen is too fragmentary to identify, but from the position of the sporangia, I doubt the correctness of the name.

Geogr. Distr. Atlantic and Indian Oceans. Mediterranean, West Indies and Australia.

S. FURCIGERA Kütz. On *Suhria vittata* and *Ecklonia buccinalis*, *fide Grunow.*

Geogr. Distr. Indian and other oceans.

STYPOCAULON PANICULATUM Kütz. Port Natal, *Krauss.* (Reinke doubts the authenticity of Cape specimens.)

Geogr. Distr. Australia. New Zealand.

S. SCOPARIUM Kütz. Table Bay, *Drege*, *Boodle*! Cape Point, *Boodle*! Robben Island, *Wenek*! Cape Agulhas, *Hohenack.* No. 154. Port Natal, *Krauss*! Cape, *Harvey*! *Scott Elliot*! Reinke queries the Cape as a locality, but I think the specimens I have examined leave no doubt as to the occurrence there of this species.

Geogr. Distr. Atlantic from Iceland to Spain. Mediterranean. Canaries.

S. FUNICULARE Kütz. Table Bay, False Bay (*fide Areschoug*).

Geogr. Distr. South Pacific and South Atlantic.

PHLOIOCAULON SQUAMULOSUM Geyler = CHÆTOPTERIS SUHRII J. Ag. Port Natal, *Krauss.* Cape Agulhas, *Hohenack.*! No. 503. Algoa Bay, *Ecklon.* Port Natal, *Ecklon.*

CHORDARIACEÆ.

LEATHESIA DIFFORMIS Aresch. Cape Point, *Boodle*! Cape, *Harvey*! Cape, *Scott Elliot*! Sea Point, *Harvey*! *Boodle*!

Geogr. Distr. Atlantic. Baltic.

MYRIOCLADIA CAPENSIS J. Ag. Cape, *Harvey.*

MESOGLOIA VIRESCENS Carm. Cape Point, *Boodle*! Cape, *Harvey*!

Geogr. Distr. Shores of Northern Europe.

CHORDARIA CAPENSIS Kütz. Cape, *Tyson*! Sea Point, *Tyson*! Cape, *Reeve*! *Harvey*! Knysna, *Hohenack.*! No. 61; *Drege*! *Krauss*! Cape Point, Sea Point, Kalk Bay, *Boodle*! Cape, *Pappe.*

C. FLAGELLIFORMIS Ag. Camps Bay, *Ecklon.* Table Bay, *Krauss.* Knysna, *Krauss*, *Hb. Trin. Coll. Dublin*! Cape, *Harvey*! *Hb. Dickie*! *Brand*! I believe, if the Krauss specimens were examined, they would prove to be *Chordaria capensis* Kütz.

Geogr. Distr. North Atlantic. North and South Pacific.

C. SORDIDA Bory. Table Bay, *Harvey.* South Africa, *Krauss*! No. 197.

Geogr. Distr. Warm Atlantic and Pacific. Indian Ocean.

PUNCTARIACEÆ.

DESMARESTIA LIGULATA var. HERBACEA. Camps Bay. Amsterdam, *Ecklon.* Cape, *Hb. Dickie*!

Geogr. Distr. North Pacific.

Var. FIRMA. Cape, *Laland*, *Harvey*, *Pappe.*

D. ACULEATA Lam. Cape, *Harvey*!

Geogr. Distr. North Pacific, North Atlantic, and warm Atlantic. Black Sea.

Sporochnaceæ.

Asperococcus sinuosus Roth. Cape Point, *Boodle*! Knysna, *Boodle*! Port Natal, *Krauss*.

Geogr. Distr. Throughout warm oceans.

A. bullosus Lam. Cape, *fide J. Agardh*.

Geogr. Distr. Adriatic, Mediterranean, Atlantic and Baltic, South Pacific.

A. compressus Griff. Cape, *Harvey*.

Geogr. Distr. Britain, Mediterranean.

A. clathratus Bory. Mosterts Bay, *fide Grunow*.

Geogr. Distr. Warm Atlantic. Red Sea. Australia.

Laminariaceæ.

Laminaria pallida Grev. Table Bay, *Pappe*! Table Bay, *Drege*! Cape, *Scott Elliot*!

L. Schinzii Foslie. Walfisch Bay, *Schinz*.

Ecklonia exasperata J. Ag. Table Bay, *fide Areschoug*. Cape Agulhas, *Hohenack.*! No. 164; *Steel*! Algoa Bay, *Hb. Dickie*! Omsamculo, *Drege*.

Geogr. Distr. North Atlantic (Canaries), New Holland, and New Zealand.

E. buccinalis Hornem. Table Bay, *fide Areschoug*. Camps Bay, Gordon's Bay, *Ecklon*. False Bay, *fide Areschoug*. Cape, *Harvey*! *Hb. Dickie*! *D'Urville, Gaudichaud, Koenig*.

Geogr. Distr. South Atlantic and South Pacific.

Pinnaria fastigiata Endl. et Dies. Port Natal, *Hb. Pöppig*. This genus is placed by Prof. Agardh next to *Ecklonia*. He has not seen the plant himself, but judges it to be closely allied to *E. buccinalis* Hornem., if not identical with it.

Lessonia nigrescens Bory. Cape Agulhas, *Hohenack.*! No. 162.

Geogr. Distr. South Pacific.

Macrocystis pyrifera Ag. Sea Point, *Tyson*! *Boodle*! Cape, *Brand*. Cape, *fide Areschoug, Drege*! *Hohenack.*! *Scott Elliot*!

Geogr. Distr. Indian Ocean.

M. planicaulis Ag. Cape, *Harvey, Pappe, Pfeiffer*.

Geogr. Distr. Indian Ocean. Canaries?

M. pelagica Aresch. Cape, *Hb. Agardh. Hb. Areschoug*.

Ralfsiaceæ.

Ralfsia verrucosa Aresch. Sea Point, Kalk Bay, Knysna, *Boodle*!

Geogr. Distr. Atlantic from Iceland to France. Baltic and Kamtschatka.

Florideæ.

Porphyraceæ.

Porphyra vulgaris Ag. Robben Island, *Boodle*! Table Bay, *Drege, Krauss, Tyson*! Sea Point, *Boodle*! *Tyson*! Kalk Bay, *Boodle*!

Geogr. Distr. General.

P. LACINIATA Ag. Seal Island, *Challenger*! Table Bay, *fide Areschoug*. Knysna, *Krauss*. Port Natal, *fide Areschoug*. Cape, *Gaudichaud*, *R. Brown*!

Geogr. Distr. Temperate Atlantic.

P. CAPENSIS Kütz. Cape Agulhas, *Hohenack.*! No. 492. Knysna, *Boodle*! Cape, *Harvey*!

Geogr. Distr. Indian Ocean. Cape Horn.

P. AUGUSTINÆ Kütz. Robben Island, *Boodle*! Cape, *D'Urville & Lesson*.

BANGIA HARVEYI Aresch. Cape, *Harvey*.

B. FUSCO-PURPUREA Lyngb. Cape, *Harvey*! *Tyson*!

Geogr. Distr. Northern seas.

CERAMIEÆ.

GRIFFITHSIA CORALLINA Ag. Table Bay, *Krauss*. Sea Point, *Tyson*!

Geogr. Distr. Atlantic (Europe). Mediterranean. W. Indies.

G. SECUNDA Harv. Muysenberg, *Harvey*!

G. CÆSPITOSA Harv. False Bay, *fide Suhr*. Cape, *Harvey*!

PTILOTA PAPPEANA J. Ag. Table Bay, *Pappe*! *Tyson*! Kalk Bay, *Pappe*! Cape, *Harvey*!

HALOPLEGMA AFRICANUM Kütz. South Africa, *fide Kützing*.

CERAMIUM GRACILLIMUM Harv. Cape Point, Kalk Bay, Knysna, *Boodle*!

Geogr. Distr. Atlantic. Mediterranean. W. Indies. Australia?

C. STRICTUM Grev. Robben Island, *Boodle*!

Geogr. Distr. North and South Atlantic. Mediterranean. Black Sea. W. Indies.

C. CANCELLATUM Ag. Table Bay, *Pappe*! Cape Point, *Boodle*! Cape Agulhas, *Hohenack.*! No. 543. Cape, *Gaudichaud*, *Harvey*!

C. DIAPHANUM Roth. Table Bay, *Zederberg*! *Pappe*! *Boodle*! Cape, *Ecklon*, *Harvey*!

Geogr. Distr. Atlantic. W. Indies. Australia?

C. RUBRUM Ag. Cape Point, *Boodle*! Natal, *Krauss*. Cape, *Brand*! *Scott Elliot*!

Geogr. Distr. General.

C. CAPENSE Kütz. Cape, *fide Kützing*.

C. OBSOLETUM Ag. Robben Island, *Tyson*! *Boodle*! Seal Island, *Challenger?* Table Bay, *Ecklon*. Cape Agulhas, *Hohenack.*! No. 540. Knysna, *Krauss*. Cape, *R. Trimen*! The specimen in the British Museum from Seal Island, collected by the 'Challenger' Expedition, and named *C. capense* Kütz., is so fragmentary that it is difficult to identify it. I believe it, however, to be *C. obsoletum* Ag.

C. CIRCINNATUM J. Ag. Cape Point, *Boodle*!

Geogr. Distr. Atlantic shores of Europe. Mediterranean.

C. PULCHELLUM Grunow. Table Bay, *fide Kützing*. Cape, *Harvey*! On *C. cancellatum*.

C. POEPPIGIANUM Grun. Port Natal, *Jelinck.* "On *Amphiroa ephedracea.*"

CENTROCERAS CLAVULATUM Ag. Seal Island, *Challenger* ! Robben Island, *Boodle* ! Table Bay, *Pappe* ! Sea Point, *Tyson* ! Cape Point, *Boodle* ! Kalk Bay, *Boodle* ! *E. Young* ! *Scott Elliot* ! Muysenberg, *Harvey* ! Knysna, *Boodle* ! *Krauss.* Cape, *Hb. Hepp* ! *Hohenack.* ! No. 538.

Geogr. Distr. In all warm seas.

Carpoblepharis minima, n. sp. Frons ramosa, ½ poll. alt. pinnis suboppositis egredientibus, majoribus compositis minoribusque simplicibus mixtis, utrinque attenuatis; favellæ interiore latere pinnularum sessiles, ramellis involucratæ; sphærosporæ in primulis lanceolatis immersæ.

Hab. ad Prom. b. Spei. In speciminibus *Laminariæ* a W. Tyson com.

C. FLACCIDA Kütz. Robben Island, *Boodle* ! *Tyson* ! Table Bay, *Harvey* ! Cape Point, *Boodle* ! Green Point, *Hb. Hance* ! Kalk Bay, *E. Young* ! Camps Bay, *Reynolds* ! Knysna, *Krauss.* Cape, *Ecklon, Drege* ! *Brand* ! *Areschoug,* Phyc. extraeurop. exsicc. No. 20. *Hb. Wenek* ! *Hb. Dickie* ! *Hohenack.* ! No. 544.

HALOTHAMNION HARVEYANUM J. Ag. Cape, *Harvey.*

H. FILICINUM Harv. Cape, *Harvey.*

H. ? RAMULOSUM J. Ag. Cape, *fide J. Agardh.*

ARISTOTHAMNION PURPURIFERUM J. Ag. = CALLITHAMNION PURPURIFERUM J. Ag. Cape Point, *Boodle* ! Kalk Bay, *Boodle* ! Table Bay, *Pappe* ! Cape, *Harvey* !

PLEONOSPORIUM BORRERI Näg. Muysenberg, *Harvey* !
Geogr. Distr. Atlantic. Mediterranean.

CALLITHAMNION HUMILE Kütz. Cape, *fide J. Agardh.* On *Iridæa.*

C. CONSTRICTUM Her. Port Natal, *Krauss.*

C. VERTICILLATUM Suhr. Cape, *Ecklon.*

C. GRACILE H. f. & Harv. ? Simon's Bay, *Challenger* !
Geogr. Distr. Campbell Islands.

C. STUPOSUM Suhr. Cape, *Ecklon.*

C. VARIEGATUM Suhr. Algoa Bay, *fide Suhr.*

C. DENSUM Suhr. Cape, *fide J. Agardh.*

C. SERTULARIOIDES Suhr. Table Bay, *fide Suhr.*

C. STRIATULUM Suhr. Cape, *fide Suhr.*

(To be continued.)

NOTES ON BRISTOL PLANTS.

By James W. White, F.L.S., and David Fry.

This paper continues the enumeration of plants not included in the *Flora of the Bristol Coalfield*, or in the supplemental notes hitherto published; and presents the more interesting observations made by us in the district during the year 1892. Species and varieties not yet recorded (so far as we are aware) for vice-counties 6 or 34 are distinguished by an asterisk.

A rather important correction has to be made. The peat-moor bramble, which there seemed to be excellent reason for publishing as *R. Cariensis* Rip. & Genev (*Journ. Bot.* 1892, p. 11), is not that species; and the record must be cancelled. Several other names have been suggested for this remarkable plant, but none of them, however, can be positively assigned to it. More investigation is needed to settle its identity.

Trigonella purpurascens Lam. In West Gloucester. This is cited in *Top. Bot.*, ed. 2, for the above vice-county on the authority of the late Dr. G. H. K. Thwaites. In his time it undoubtedly grew at Shirehampton, on the Gloucestershire bank of the Avon, below Clifton, but has not been found there for many years past, though repeatedly and carefully searched for; therefore its discovery in fair quantity, last summer, on Brandon Hill, which is situated in that part of Bristol included in West Gloucester, may be worth placing on record. Several of the plants with which *T. purpurascens* is associated on Brandon Hill, e. g., *Trifolium subterraneum* and *T. filiforme*, are uncommon in the Bristol district.

Lathyrus tuberosus L. Alien. On the Avon bank near Sea Mills, West Gloucester. During the last two years several persons have drawn attention to the presence of this plant in a spot where its introduction is difficult to explain, especially as it is not one of the common waifs of ballast or cultivation.

Rubus carpinifolius W. & N. Hedges at Downhead Common, N. Somerset, in some abundance. Considered typical by the Rev. W. Moyle Rogers.

**R. Sprengelii* Weihe. On this interesting plant, which grows abundantly on Yate Common, West Gloucester, Dr. Focke, to whom specimens were sent, made the following note:—"A variety that may be called *longistamineus*. It is distinguished from the typical *Sprengelii* by having filaments exceeding the styles, and by the want of glandular bristles. It is the *R. Sprengelii* as it has been described by Genevier."

**R. Borreri* Bell-Salter. This well-marked bramble occurs at Mangotsfield, W. Gloucester, somewhat sparingly over a space of about 150 yards; and very abundantly at Brislington, near Keynsham, N. Somerset. At the latter locality it has been known for many years, and has from time to time received a great variety of names; but the true position of this plant was not ascertained until last summer, when owing to the untiring zeal and great acumen of the Rev. W. Moyle Rogers its identity with the original

R. Borreri Bell-Salt. was clearly established. Mr. Rogers was well acquainted with this Rubus in Dorset before specimens from W. Gloucester and N. Somerset were submitted to him.

**R. anglosaxonicus* Gelert. On the borders of King's Wood, towards Congresbury, N. Somerset. Dr. Focke says of this that it is a little different from the usual forms, but not in any essential point.

The bramble, abundant on Clifton Down, that stands as *Radula* in the *Flora*, p. 60, having been so named by the late Mr. Briggs some years before *anglosaxonicus* was found to be British, has since been considered by the best authorities to be more nearly related to the latter. It is the var. *raduloides* of *R. anglosaxonicus* described by Mr. Rogers in his 'Essay.' Precisely the same thing occurs also by the Avon under Sneyd Park, at Henbury, and at Hanham in West Gloucester; and at Brislington, Clevedon, Stanton Drew, Woollard and Leigh Wood in N. Somerset.

**R. rosaceus* W. & N. var. d. *infecundus* Rogers. A handsome bramble, to which Mr. Rogers has given the above varietal name, occurs in W. Gloucester, at Hanham, and by the Avon below Clifton; in both localities abundantly. In N. Somerset it has been found at Brislington. Observation extending over several years proves that this variety fails to mature its fruit, excepting rarely in very small quantity.

**R. fuscus* W. & N. A strong luxuriant form of this aggregate grows near the Avon below Sneyd Park, W. Gloucester.

**R. Kaltenbachii* Metsch. Well distributed on the skirts of King's Wood, towards Congresbury, N. Somerset; and found to agree exactly with the plants already known in the northern division of the district.

**Sedum Telephium* L. b. *Fabaria* Koch. Very sparingly in woods above the Avon at Hanham, in W. Gloucester; and abundantly at Brislington, N. Somerset. Much smaller in all its parts than a. *purpurascens*, from which it seems quite distinct as a variety, and does not alter in cultivation.

Anchusa officinalis L. Alien. Near Fox's Wood, Brislington, N. Somerset. Observed by Mr. Withers, who has known it several years, and who showed us two or three plants. These are probably derived from sweepings of railway waggons deposited at the place.

Asperugo procumbens L. Alien; with the last. Also observed by Mr. Withers several seasons, and no doubt derived from the same source. Mr. Withers, too, found this plant last summer in an arable field at Twerton, near Bath, rather plentifully.

**Symphytum officinale* L. var. *patens* Sibth. This variety, which occurs in N. Somerset, at Brass Knocker Wood, near Bath, differs from the typical form by its larger and more globular corolla, of a light *pure blue* colour mixed with white; somewhat shorter and blunter calyx-teeth; broader (more ovate-lanceolate) leaves, abruptly rounded at the base, and only slightly decurrent; and lastly, by its tougher, less succulent, and more stiffly hairy stem, which has only raised lines instead of very prominent wings as in *S. officinale*. From the above it will be seen that *patens* is a much more distinctly marked

variety than might be inferred from the descriptions to be found in the text-books. That of Dr. Boswell in *E. B.*, ed. 3, is the most complete, though incorrect in some particulars and wanting in others. The corresponding figure of the plant, however, is very good; the shape of the leaves, wingless form of stem, as well as the remarkable colour of the inflorescence—red in bud, changing to light blue and white in the fully-expanded corolla—being all well rendered.

Chenopodium hybridum L. in N. Somerset. Found last September in Bath, growing on rubbish heaps and waste ground, at three localities somewhat widely apart. Quoted for N. Somerset in *Top. Bot.*, ed. 2, only as a probable error.

Salix triandra L. That both N. and S. Somerset are quoted in *Top. Bot.*, ed. 2, as exceptions for this willow is the reason for the following records of its occurrence in N. Somerset, where it has been found at Berrow; near South Brent; Clevedon; Compton Dando; Saltford and Walton-in-Gordano. The trees at Clevedon and Walton-in-Gordano are typical and female. Those at Saltford, which are also female, show a slight approach to *fragilis* in the shape of the leaves, but none whatever in that of the capsules. At Compton Dando, Berrow, and near South Brent all the examples are male, and agree well with specimens from other counties which have been referred by competent authorities to var. b. *Hoffmanniana*.

**Scirpus Tabernæmontani* Gmel. An addition to the *Flora*. Abundant for sixty yards or so in one of the marsh ditches between Draycott and Wedmore. This is not on record for N. Somerset.

**Carex paludosa* Good. var. *subulata* Doell. (1843) = *C. spadicea* Roth. Found by us for the first time at the end of May last, in wet ditches below Cheddar, N. Somerset. The examples were considered by Mr. Bennett to be unusually characteristic and typical.

DISTRIBUTION OF LEJEUNEÆ IN IRELAND.

By the Rev. C. H. Waddell.

In this Journal for 1887 Dr. Spruce gave a most interesting account of the distribution of Lejeuneæ in the British Isles. In trying to account for the present distribution of Mosses, especially in Ireland, I think more attention ought to be directed to the altered state of the country, once covered with woods, whose shady, humid recesses probably furnished a home for many of the rarer species. The woods (which were the fastnesses of the ancient inhabitants) have disappeared, the drained country has become drier, and these damp-loving species are now rarities, only to be found in the recesses of a few shady ravines to which they have retired. Is it not probable that these were common plants in the Ireland of St. Patrick's days? Even in the time of Mr. John Templeton, who diligently studied the Moss-flora of Antrim and

Down during the years 1801 to 1825, some species were more plentiful than they are now, and some have disappeared.

Let me give an illustration of this process. In 1885 *Jubula Hutchinsiæ* (Hook.) and *Colo-Lejeunea calcarea* Lib. were growing by Shenina river, in Tollymore Park, Co. Down; in 1891, and again in 1892, no trace of them could be found in that place. A great many trees had meanwhile been felled, and the place opened to the sunlight. Fortunately I found *J. Hutchinsiæ* about a mile farther up the park, on the Spinkwee river, so that it is not extinct in that neighbourhood.

I would record the following localities for a few species (some of them noted in Stewart & Corry's *Flora of N. E. Ireland*) as additional to those given by Dr. Spruce:—

Homalo-Lejeunea Mackaii (Hook.). Tollymore Park (Down); Gobbins (Antrim); Omeath (Louth).

Harpa-Lejeunea ovata Tayl. Slieve Donard (Down); Glenariff (Antrim).

Drepano-Lejeunea homatifolia (Hook.). Slieve Donard; Tollymore Park; Collin Glen; Glenariff; Omeath.

Eu-Lejeunea flava (Sw.). Tollymore Park; Glenariff. — *Eu-Lejeunea patens* Lindb. Tollymore Park; Glenariff.

Micro-Lejeunea ulicina Tayl. Gillhall (Down).

Colo-Lejeunea calcarea Lib. Tollymore Park; Glenariff; Omeath.

Coluro-Lejeunea calyptrifolia (Hook.) It appears from a MS. of Mr. Templeton's that this rare species was found at Luttrellstown (Dublin).

Acrobolbus Wilsoni Tayl. *c. fr.* Collin Glen (Antrim).

Jubula Hutchinsiæ (Hook.). Tollymore Park; Rostrevor (Down); Lodore (Cumberland).

Radula aquilegia Tayl. Slieve Donard.

Adelanthus decipiens (Hook.) Mitt. Plish Wood (Sligo).

ADDITIONAL RECORDS FOR THE SCILLY ISLES.

By A. Somerville, B.Sc., F.L.S.

Since the publication in the *Journal of Botany* for 1864 (pp. 102–120) of the valuable contribution by Mr. F. Townsend, M.A., towards a Flora of the Scilly Isles, the only further communication in these pages on the botany of the Group seems to have been that by Mr. M. A. Lawson in the Journal for 1870 (pp. 357–358), wherein are enumerated some twenty-five additions to the known flora of the islands, observed by that gentleman during a visit in 1869.

Twenty-one years later, at the end of July, 1890, I made a short stay on St. Mary's, visiting while there all the other inhabited islands, *viz.*, St. Martin's, Tresco, Bryher, and St. Agnes, and, in the course of botanical search, met with altogether 300 vascular

plants. This is fewer by about fifty than were enumerated by Mr. Townsend, but is a large number to have been observable during a few days not exclusively devoted to work of the kind, and when, too, it is remembered, that, as Mr. Townsend points out, the whole group of the Scilly Isles is included in an area of about ten miles by five, and that the highest land does not rise to over 200 feet above sea-level.

Of the plants obtained by me examples were, at the time, transmitted in the fresh state to Mr. Arthur Bennett, F.L.S., for the favour of his confirming their identification, and among them there were found by him to be, in all, some forty-four species and vars. unmentioned by Messrs. Townsend or Lawson, or otherwise recorded as occurring on the islands. It may be the case that some, or even the majority, of these may have been included in the Flora of Cornwall, prepared by the late Mr. Ralfs, but this remains as yet in MS., and it is not known whether the Penzance Natural History and Antiquarian Society intend to undertake its publication.

The following is a list of the new records referred to, and for which I have not thought it necessary to indicate localities, *viz.*:—

Ranunculus Lenormandi F. Sch.
R. sardous Crantz. b. *parvulus* (L.).
Fumaria pallidiflora Jord. b. *Boræi* Jord.
Raphanus Raphanistrum L.
Polygala serpyllacea Weihe.
Geranium Robertianum L.
Medicago denticulata Willd.
†*Trifolium incarnatum* L.
T. scabrum L.
†*T. hybridum* L.
Vicia sepium L.
Prunus insititia L.
Rubus discolor (auct. angl.).
Potentilla procumbens Sibth.
Callitriche hamulata Kuetz.
C. obtusangula Le Gall.
Peplis Portula L.
Epilobium palustre L.
Pimpinella Saxifraga L.
Filago spathulata Presl.
Pulicaria dysenterica Gærtn.
Chrysanthemum Leucanthemum L.
†*C. Parthenium* Pers.
Anagallis cærulea Schreb.
Myosotis cæspitosa Schultz.
Veronica montana L.
Pedicularis palustris L.
Orobanche amethystea Thuill.
†*Calamintha officinalis* Moench.
Plantago major L., b. *intermedia* (Gilib.).
Polygonum Roberti Loisel.
Rumex conglomeratus Murr.
Juncus effusus L.
Potamogeton pusillus L.
Ruppia rostellata Koch.
Zostera marina L.
Scirpus Tabernæmontani Gmel.
Carex muricata L.
Alopecurus pratensis L.
Agrostis alba L., c. *maritima* Mey.
A. alba L., var. *major*.
Deschampsia cæspitosa Beauv.
Festuca uniglumis Soland.
Agropyron repens Beauv., b. *barbatum* Duval-Jouve.

Of the above only one, viz., *Festuca uniglumis* Soland., had not been previously recorded for Cornwall West.

Mr. Townsend, when he wrote, alluded to the fact of the wealth of the islands being chiefly derived from the export of early potatoes. Of recent years a fresh and valuable industry has sprung up, in the cultivation and export, in early spring and later,

of flowers, mainly lilies of all kinds, to markets throughout England and Scotland. This now absorbs the attention of large as well as small holders, and on St. Mary's there are many flower farms to be seen. The industry is especially important in view of the declining returns from the lobster and other fisheries on which the inhabitants at one time so greatly depended. I have it on good authority that from the beginning of February till the end of April, despatches of flowers in crates and boxes, to the extent of about forty tons measurement weekly, leave the islands by steamer for Penzance, where the nearest railway connection is to be had.

This increased gardening, with cultivation generally, will doubtless account for the introduction, since Mr. Townsend wrote, of some at least of the above plants, and will probably lead to further additions, while the extensive marsh-lands of St. Mary's and the large total of shore tract around the Islands, seem likely to retain hold of the numerous aquatic and maritime plants peculiar to, and at present occurring on, them. It would seem therefore that the flora of Scilly may increase rather than diminish, even though such rare species as *Ornithopus ebracteatus* Brot. are becoming scarcer, due, in part, it is to be feared, to the inconsiderate rapacity of collectors and so-called botanists.

I desire in closing to express my obligations to Mr. A. Bennett, for critically examining at the time the species obtained during my visit, and for kind trouble taken by him in connection with them since.

IN MEMORY OF BENJAMIN CARRINGTON.

Benjamin Carrington was born at Lincoln on January 18th, 1827. He studied at Liverpool and the University of Edinburgh; was apprenticed at Liverpool to Dr. M'Nicoll; graduated M.R.C.S. Eng., 1850, and M.D. Edin., 1851; practised first at Radcliffe, near Manchester; then in succession at Lincoln, Yeadon, Southport, and Eccles. Twenty years ago he settled at the latter place, where he became Medical Officer of Health, a position which he resigned about two years ago, on account of continued ill-health. He removed to Brighton, where after much patient suffering he passed away, on the 18th of January, his 66th birthday, and was buried in the Carlton Hill Cemetery.

Whilst studying at Edinburgh, Dr. Carrington wrote a monograph of the British grasses, and illustrated it with a set of specimens, with dissections of the minuter organs, so beautifully and accurately prepared that they won for him the admiration of the leading botanists of the University. Here he made the acquaintance of Greville, Hooker and Balfour, and no doubt his life's devotion to cryptogamic botany was influenced originally by these distinguished friends.

He was an enthusiastic naturalist, but it is of his contributions to botanical science, and more particularly to Hepaticology, that I wish to write. In a letter I received from him some years ago,

referring to *Anthelia julacea* var. *clavuligera*, he remarks:—"Curiously enough, it was the first *Jungermannia* I ever collected, having met with it on the mountains near Glen Shee, August, 1850. I remember the circumstance, because I could not make out at first whether it was a moss or hepatic." For some years following, short papers, chiefly on mosses, appeared from his pen, and he began a correspondence with nearly all the leading cryptogamic botanists of Europe, who were interested in Mosses and Hepaticæ,—De Notaris, Gottsche and Lindberg, on the Continent; and Wilson, Hooker, Spruce and others, here. In 1861 he visited the south of Ireland: the result of this visit was the appearance of his interesting "Gleanings among the Irish Cryptogams," published in *Trans. Bot. Soc. Edin.* in 1863—an extensive list of Lichens, Mosses and Hepaticæ, with valuable notes on many species, especially of the latter order. It is illustrated by two beautiful plates, which indicate the skill he had attained in the art of delineating cryptogamic plants. Another result of this visit to Ireland was the rich contribution he made to Rabenhorst's *Bryotheca Europæa*, and Gottsche and Rabenhorst's *Hepaticæ Europeæ*, one part of the latter being almost composed of the doctor's collecting.

In 1862 appeared Miall and Carrington's *Flora of the West Riding*, for which he compiled the list of Cryptogams. About this time he began to prepare a work on the British Hepaticæ, corresponding with all collectors and those interested in this group. In 1874 appeared the first part of what promised to be the most important work since the publication of Hooker's magnificent *British Jungermanniæ* in 1816. The fourth part had an ominous note appended, which stated that in consequence of the indisposition of the author the letterpress was some pages short. For some time he continued in a very low state of health, and about the years 1880 and 1881 he had to undergo several painful operations, under which his friends were afraid he would succumb. He rallied, however, and was for several years longer able to pursue his favourite studies, but never with the same ardour; and he seemed to shrink from the task of completing his valuable work, although friends offered to assist him. He wrote the article "Hepaticæ" in the *Encyclopædia Britannica*. In 1878 we issued the first part of our *Hepaticæ Britannicæ Exsiccatæ*, in the preparation of which Dr. Carrington took great delight.

In 1876 he spent some time in the neighbourhood of the Trossachs, and there made what Dr. Spruce describes as one of his happiest finds, *Hygrobiella myriocarpa*. This he published, with several new species, in the *Trans. Bot. Soc., Edin.*, vol. xiii. (1879).

In 1886, two Manchester botanical friends who had gone to the Antipodes,—Mr. Thomas Whitelegge to New South Wales, Mr. R. Bastow to Tasmania—sent large collections of Hepaticæ, which we studied together. The results were published: those of Mr. Whitelegge's collection in the *Proc. Linn. Soc. of N. S. Wales*, illustrated by twelve plates, the cost of which was generously defrayed by the late Sir William MacLeay; those of Mr. Bastow in the *Proc. Royal Soc. of Tasmania* for 1887. These were the two

last papers published by Dr. Carrington. In the same year he was elected a Corresponding Member of the Linnean Society of N. S. Wales and of the Royal Society of Tasmania. On the resignation of the first President, Mr. John Whitehead, he was elected President of the Manchester Cryptogamic Society, which position he held till his death. Many years ago he was elected F.R.S.E., and he was at one time F.L.S.

The following British Hepaticæ were either found or identified as British by him:—*Cesia crenulata* (Gott.), sent to Dr. Gottsche as a new species. *C. corallioides* (N.), detected under the name of *C. concinnata* in Dr. Greville's herbarium. *C. crassifolia* (Carr.), collected near Ben Lawers by the late Dr. A. O. Black. *Marsupella sphacelata* (Giesecke), collected by the late G. E. Hunt on Ben Mac Dhui and Loch Kandor, 1868. *M. Nevicencis* (Carr.), collected on Ben Nevis by Mr. John Whitehead, July, 1875. *Scapania Bartlingii* (Hampe), first recorded as British from specimens collected on rocks near the Strid, Bolton Woods, Yorkshire, 1858. *Hygrobiella myriocarpa* (Carr.) Spruce, discovered near Ben Venue, July, 1876. *Riccia glaucescens* Carr., discovered at Barmouth, N. Wales. *R. tumida* Lindenb., collected by Mr. Joshua, near Monmouth, May, 1877. *R. sorocarpa* Bischoff, collected by B. M. Watkins on Great Doward Hill, near Ross.

One of our rarest and most beautiful hepatics was named in his honour by the late Prof. Balfour, and Herr J. B. Jack, in his monograph of the European *Radulæ*, named one of the rarest, *Radula Carringtoni*, after him.

About twelve months ago his valuable collection was acquired for the Manchester Museum by the Owen's College authorities, and under the care of Prof. F. E. Weiss it has been arranged and is now accessible to students.

I may conclude this inadequate memoir by recording my conviction that had he enjoyed moderate health and more leisure, the name of Benjamin Carrington would have ranked amongst the greatest of our cryptogamic botanists. What he has done, under circumstances the most adverse, has, however, been no mean addition to the scientific knowledge of the century.

W. H. Pearson.

SHORT NOTES.

Lophocolea spicata Tayl. (p. 77). — "Near Conway, N. Wales, *W. Wilson*, 1843–4," may be added to the stations mentioned by Mr. Marquand for this rare hepatic. In 1889 I collected it in moderate quantity at Trefriw, probably Wilson's station. — W. H. Pearson.

Alchemilla.—Mons. R. Buser, of Geneva, is desirous of having the opportunity of studying British forms of *Alchemilla vulgaris* and *A. alpina* to see if any correspond to named Continental vars. I shall be happy to take charge of any specimens that reach me

(at Crymlyn, Bournemouth) during April, and forward them to M. Buser. Botanists sending specimens will please make it clear whether they wish their specimens returned, and will number those that are *not* required back.—EDWARD F. LINTON.

EPILOBIUM LAMYI F. Schultz. — This is omitted from the list of "First Records," and, if intentionally, I fail to see on what grounds. It cannot well be passed over as an alien, since it has all the appearance of being native in Surrey and E. Kent (*teste* Rev. E. S. Marshall), and in Worcestershire (*teste* Mr. R. F. Towndrow). It can hardly have been left out as unworthy of specific rank or mention, in a list in which *E. alpinum* L. and *E. anagallidifolium* Lam. are both admitted; considering the convincing testimony Messrs. H. & J. Groves (*Journ. Bot.* 1889, 109) and the Rev. E. S. Marshall (*Journ. Bot.* 1889, 146; 1890, 6) have given to the view adopted by Nyman and Prof. Haussknecht, that these are two names for one plant. The discovery of *E. Lamyi* for Britain must be credited to Haussknecht, who recognised specimens in the British Museum from a "brick-field, Middlesex," as this species, and also found it growing near Hampton Court (probably in Surrey); date, 1884, when his monograph of the genus was published. Mr. R. F. Towndrow tells me that it was through his being shown the sheet in the British Museum, by Mr. H. N. Ridley, that he recognised in 1885 the plant in Worcestershire. The distinction between *E. Lamyi* and its nearest congeners, *E. adnatum* Griseb. and *E. obscurum* Schreb., is well drawn out in this Journal (1889, 5; and 1890, 145) by Mr. Marshall, who tells me in a recent letter that the offspring of these species, viz., *E. adnatum* × *Lamyi* and *E. Lamyi* × *obscurum*, is, in his experience, uniformly sterile.—EDWARD F. LINTON.

NOTICES OF BOOKS.

Botany and Outline Flora of Lincolnshire. By F. ARNOLD LEES, M.R.C.S., L.R.C.P. Lond. Reprinted from White's History, Gazetteer, and Directory of the County. 1892.

THE author of the *Flora of West Yorkshire* is entitled to the thanks of Lincolnshire botanists for attempting to supply that long-felt want, a complete list of the Phanerogams and Cryptogams of Lincolnshire. It is to be regretted that through unforeseen circumstances he has failed to fulfil his purpose: such a list should be accurate and complete, and Mr. Lees' *Outline Flora* possesses neither of these essentials. As examples of inaccuracy I may point out that the records for *Medicago minima* and *Didymodon sinuosus* are both incorrect; that Ray's record for *Sempervivum tectorum* is for v.-c. 53 (South Lincs.), not North Lincs.; that *Lastrea Oreopteris* has been recorded for v.-c. 54 (North Lincs.) by Mr. Fowler; and that Ray's Tetford Wood *Geum* was *G. intermedium*, not typical *rivale*. Of minor importance is the fact that in several cases first

records can be traced back to an earlier date and authority; thus a Lincs. record for *Stratiotes aloides* is to be found in Johnson's Gerard (1636); Ray recorded *Salicornia herbacea* for Lincs. in the *Historia Plantarum* (1686); and *Chara vulgaris* was found in 1876 by Dr. H. F. Parsons. In some cases the authorities quoted are incorrect; thus *Aulacomnium palustre* var. *imbricatum* was Mr. Peacock's "find," not mine; and several other mosses attributed to me were collected by Mr. J. Larder, of Louth, and merely passed through my hands on their way to Dr. Braithwaite, who kindly named them for us. Mr. Lees must stand sponsor for *Rosa canina* var. *tomentella;* I saw the plant when he found it, but knew nothing of the Roses at that time.

The thanks of Lincolnshire botanists are due to Mr. Lees for placing a mark (!) against those plants which he has himself seen growing in the county; also for having cleared up such doubtful records as *Sibthorpia europæa* and *Œnanthe pimpinelloides;* but I cannot help being amused at the way in which he disposes of others as "mis-nomers," "mis-conceptions," "ambiguities," &c. I could wish that the very interesting and useful prefatory remarks had been amplified at the expense of the space devoted to "First Records."

A great deal of drudgery will still have to be undergone by someone in the form of wading through volume after volume of topographical and botanical works, and herbaria (more often than not, perhaps, quite fruitlessly), before a complete Lincolnshire plant-list can be produced. To give some idea of what yet remains to be done, I may mention the following among other herbaria which contain Lincolnshire specimens, and which still require examination:—First and foremost is the herbarium of the British Museum (Natural History), South Kensington, which I have only examined as far as *Fumaria Vaillantii;* then come Herb. Buddle; Herb. Plukenet; Herb. Merrett; the York Museum Herbarium, containing Rev. J. Dalton's *Botanist's Guide* record specimens, as well as others from Lincolnshire; an old herbarium formed at Lincoln, and now (or lately) in the custody of Mr. C. Simpson, of Queengate, Lincoln; a collection of plants made in the Gainsboro' neighbourhood by Miss Stanwell; and Herb. Carr and Herb. Salt in Weston Park Museum, Sheffield. In addition to these herbaria, I have the titles of over seventy books which should be looked through before it can be said that every record has been searched.

J. Burtt Davy.

The Year-book of Science. Edited for 1892 by Prof. T. G. Bonney, D.Sc., LL.D., F.R.S. Cassell & Co. 8vo, pp. viii, 519. Price 7s. 6d.

We are glad to welcome the second annual issue of what may become the *Hazell's Cyclopædia* or *Whitaker's Almanac* of science. Before, however, it attains that position, it will require to be more complete than it is at present. While fully recognising the merits of the work, we propose to draw attention to a few of its deficiencies.

"Biology" is divided into "Animal" and "Botanical"; and while our remarks apply almost exclusively to the latter section, we cannot but wonder in which division such a book as Darwin's *Origin of Species*, or Weismann's *Essays upon Heredity*, would have been classed. Books and papers do still appear on general biological principles, and a section should have been set apart for their reception; Prof. Romanes' *Darwin and after Darwin*, reviews of which appeared in this Journal and elsewhere, might then have been mentioned; and Karl Pearson's *Grammar of Science*, though of course not purely biological, might be recorded somewhere in the book. A similar criticism will apply to the Botanical section. Under a "general" heading would fall text-books, surely sometimes worthy of record, as, for instance, Frank's estimable *Lehrbuch*, the first volume of which appeared last year.

There are four divisions:—Systematic and Geographical Botany, by W. B. Hemsley; Morphology and Biology, by G. Massee; Minute Anatomy, by D. H. Scott; and Physiology, by F. E. Weiss. Each division is subdivided, and in the first three the subdivisions are again divided. In "Minute Anatomy" the arrangement is rational enough; of the two subdivisions, Histology and Anatomy, the second includes the two headings, General and Special; but Messrs. Hemsley and Massee are not happy in their grouping. The Systematic and Geographical division contains the following subdivisions, all, at any rate typographically, of the same value:—Nomenclature, Descriptive, The British Flora, The Asiatic Flora, New Chinese and Japanese Plants, Australian and Polynesian Flora, The African Flora, The American Flora, Geographical, Orchids, Figures of Plants, Miscellaneous, and—the *Kew Bulletin of Miscellaneous Information!* From the three lines of text under Descriptive, it is evidently a large subdivision including the following "Floras," and comparable in importance with Geography, Orchids, or the *Kew Bulletin*. "Miscellaneous" consists chiefly of monographs or revisions of Orders, and is very incomplete; no mention is made of the several parts of Engler and Prantl's valuable and well-known *Pflanzenfamilien*, or the two parts of Baillon's *Histoire des Plantes*. We recall, too, a classification of *Solanaceæ* suggested by Wettstein, and reported in the *Centralblatt*, but omitted here. Of course, in so small a volume we cannot expect to find anything approaching a complete bibliography, but the omission of many important works and papers is in striking contrast with the mention of not a few of but little importance. Mr. Hemsley places "Nomenclature" first, "because there has been unusual activity in this direction." Unfortunately, instead of giving the rules proposed by the Berlin botanists, he writes a summary of the points at issue as these appear to him, and seems to approve of those who "would continue to use names that have long been current, regardless of the law of priority, though they would observe priority in all recent work" (!). Nothing more is needed to show the absurdity of such a compromise, but it would be interesting if Mr. Hemsley had given the date from which "recent work" may be supposed to start and

priority is to be observed. If the few lines in which Dr. Dyer (in *Nature*) expresses his opinion are worthy of record, Mr. Britten's exhaustive paper in *Natural Science* should have been mentioned; but that journal is entirely ignored throughout the botanical section of the *Year-book*. Mr. N. E. Brown, by the way, appears to have discovered the secret of perpetual youth, for Mr. Hemsley refers to him as "a young botanist," although he has completed twenty years' work in the Kew Hebarium.

Cryptogams are poorly represented in the Systematic portion, where, moreover, we should expect to find Massee's monograph of the Myxogastres, rather than in the next division. In the absence too of other work on Algæ, the two papers forming the first part of vol. xi. of the *Ann. du Jard. Bot. de Buitenzorg* might have found place, *viz.* Fortmorel's "Diatomées de la Malaisie," of 58 pp. and viii plates, including descriptions and illustrations of nearly fifty new species, and Solms Laubach's account of three Genera of Algæ.

The confusion of headings in the part devoted to Morphology and Biology is even greater. The subdivision Phanerogams is considered under three headings,—Morphology, On the nature and development of the corky excrescences on stems of *Xanthoxylon* (a short paper again mentioned under Anatomy, where indeed a cross reference *is* given), and Biology. This subdivision, too, is curiously incomplete, for while under Biology short papers on the presence of cleistogamous flowers in species of *Polygonum* and the effect of earthquakes on plant-life are noticed, nowhere is there any reference to Sir John Lubbock's important work on "Seedlings," comprising two large volumes, or to Schenck's ex-exhaustive *Beitrage zur Biologie der Lianen*, nor under Morphology to Schumann's valuable *Morphologische Studien*, in which he continues his work on the Inflorescence.

In the Vascular Cryptogams there is a worse muddle; if we turn to the heading "Phycological Memoirs," we find it is "a new publication containing the following papers," edited, Mr. Massee might have added, by Mr. George Murray. But apparently the only paper is one "On *Splachnidium rugosum* Grev., the type of a new Order of Algæ," the title of which appears in italics under the heading. Then follow, as three new headings, the titles of as many papers by Mr. Murray, Miss Barton, and Mr. Batters respectively. The second of these is referred to "Brit. Assoc., 1892"; the other two have no place of publication. Now as a matter of fact they all form part of the *Phycological Memoirs*, the "Brit. Assoc., 1892" evidently referring to a communication by Schmitz bearing on the same subject. The rest of the work on Algæ that follows falls under the heading of Mr. Batters's paper. Moreover, in the brief note on the important *Splachnidium* paper a serious mistake gives a wrong impression of the result. The authors make three suggestions as to the nature of the fruit, which the recorder quotes, and says, "these three possibilities, considered as lying outside the range of probability, it is stated," &c. This is a bad blunder, for the authors dispose of the first and second, and adopt

the third, a new order being founded on this and other characters not mentioned by the recorder. Confusion such as this is apt to shake one's confidence in the value of the record.

The record of Physiology might have been fuller. With few exceptions it consists of short accounts of papers which have appeared in half a dozen well-known German periodicals.

It is curious that Mr. Hick should have forgotten Seward's *Fossil Plants as tests of Climate*, which he reviewed for this Journal but omits from his Palæobotanical record.

A. B. Rendle.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 9). — R. Franzé, 'Ueber die feinere Structur der Spermatozoen von *Chara fragilis*.' — (No. 10). H. Eggers, 'Marantaceæ nonnullæ Ecuadorienses' (2 plates).—(No. 11). A. Schober, 'Ueber eine doppelte Secretion bei *Xanthorrhæa*.'

Bot. Gazette (Feb. 15).—F. B. Maxwell, 'Comparative study of roots of *Ranunculaceæ*' (3 plates). — C. Robertson, 'Flowers and Insects.' — J. M. Coulter & J. N. Rose, 'N. American *Umbelliferæ*' (*Enantiophylla*, gen. nov.: 1 plate). — A. Schneider, 'Influence of anæsthetics on plant transpiration' (1 plate). — O. F. Cook, 'Is *Polyporus* carnivorous?'

Botanical Magazine (Tokio). — (Jan. 10). R. Yatabe, *Dianella straminea*, sp. n.

Bull. de l'Herbier Boissier (March). — P. Hennings, 'Fungi Æthiopico-arabici' (2 plates). — C. DeCandolle, 'Sur les bractées florifères' (1 plate).—P. Paiche, '*Zannichellia tenuis*.' — J. Müller, 'Lichenes Arabici et Amboinenses.'

Bull. Soc. Bot. France (xxxix: Session en Algérie). — A. Battandier, 'Les anciens botanistes algériens.' — E. Guinier, 'La végétation sous le couvert des arbres.' — J. Vilbouchevitch, 'L'étude géo-botanique des terrains salants.' — L. Trabut, 'Germination du *Cocos nucifera*.' — Id., 'Déhiscence des capsules dans les *Eucalyptus*.' — L. R. Clary, 'Herborisations dans le Djeleb Amour.' — *Podanthum aurasiacum* Battandier & Trabut, sp. n. (1 plate).

Bull. Torrey Bot. Club (Feb.). — T. Morong, *Listera borealis*, sp. n., and notes on Orchids. — G. B. Sudworth, Nomenclature.— P. A. Rydberg, 'The American Black Cottonwood' (*Populus angustifolia* James & *P. acuminata*, sp. n.: 1 plate). — B. D. Halsted, 'A Century of American Weed Seeds.'—A. A. Heller, 'Flora of Luzerne County, Penn.' — N. L. Britton, *Rusbya* (gen. nov.; *Vacciniaceæ*).

Erythea (March).—E. L. Greene, 'Observations on Compositæ.' —A. Davidson, 'Immigrant Plants of Los Angelos County.'—F. v. Mueller, 'On *Jussiæa* of Linnæus.' — W. L. Jepson, 'Studies in Californian Umbelliferæ.'—M. A. Howe, 'Monterey Bay.' — F. T. Bioletti, 'New Californian Plants.'

Gardeners' Chronicle (Feb. 25). — *Galanthus byzantinum* Baker, sp. n.

Irish Naturalist (March).—R. Ll. Praeger, 'Flora of Co. Armagh' (cont.). — W. Swanston, 'Silicified Wood of Lough Neagh.' — N. Colgan, 'Flora of Aran Islands.'

Journal de Botanique (Feb. 16, Mar. 16).—L. Guignard, 'Sur le développement de la graine' (cont.). — (Feb. 16). J. Vesque, 'La tribu des Clusiées' (cont.).— G. Poirault, 'L'oxalate de calcium chez les Cryptogames vasculaires.' — P. Hariot, 'Sur quelques Ustilaginées.' — (Mar. 1). P. v. Tieghem, 'Classification des Basidiomycètes.' — E. Belzung, 'Sur les sulfates et les nitrates des plantules en voie de germination.' — (Mar. 1, 16). J. Müller, 'Lichenes neo-caledonici' (cont.).

Midland Naturalist (March).— W. Mathews, 'County Botany of Worcester' (cont).—J. E. Bagnall, 'Notes on the Flora of Warwickshire' (cont.).

BOOK-NOTES, NEWS, &c.

The *Biographical Index of British and Irish Botanists* is now printed off, with the exception of the introductory matter and list of authorities cited, and will be issued to subscribers shortly after Easter. The work has been greatly enlarged since its appearance in this Journal in serial form. Those who have not yet sent in their names, but are desirous of obtaining the book at subscriber's price (4s.), should communicate at once with the publishers of this Journal (Messrs. West, Newman & Co.), as the cost will be considerably raised on publication. The edition is limited to five hundred copies.

The British Museum Catalogues have just received a notable addition in the *Guide to Sowerby's Models of British Fungi in the Department of Botany*, which has been prepared by Mr. Worthington G. Smith. The history of these models, which will be found at length in this Journal for 1888 (pp. 231, 268), is briefly summarised by Mr. Carruthers in a prefatory note. Mr. Smith's *Guide* is much more than its title implies: it is indeed a popular handbook to the better known of our larger fungi, and as such will be useful apart from the collection to which it refers. It is illustrated by nearly a hundred figures, many of them prepared by Mr. Smith especially for this work: and contains descriptions of 210 species, with such information concerning them as is likely to be of interest to the general reader. The work contains 82 beautifully printed pages, and costs fourpence; the Trustees of the British Museum are to be thanked for having produced so excellent a guide at so low a price.

We regret to announce the death of Mr. Charles Pierpoint Johnson, author of *British Wild Flowers*, which occurred at Camberwell on March 6; also of the Rev. Dr. Woolls, of Sydney, of Dr. George Vasey, whose works on American Grasses have often been noticed in this Journal, and of Dr. Prantl.

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BRITISH AND FOREIGN.

EDITED BY

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South Kensington.

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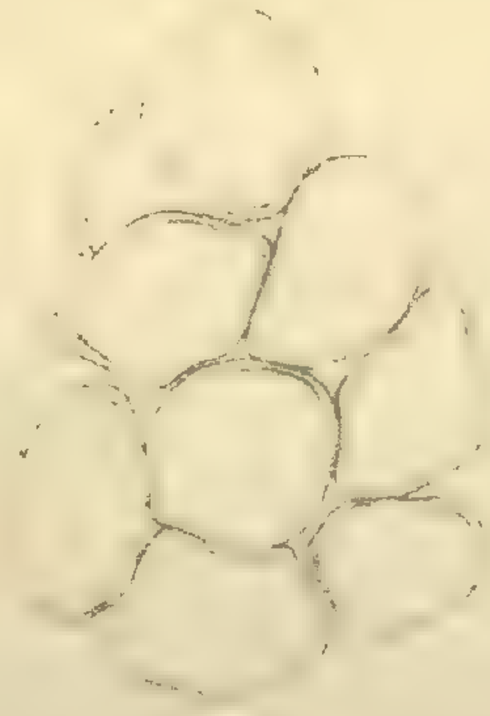

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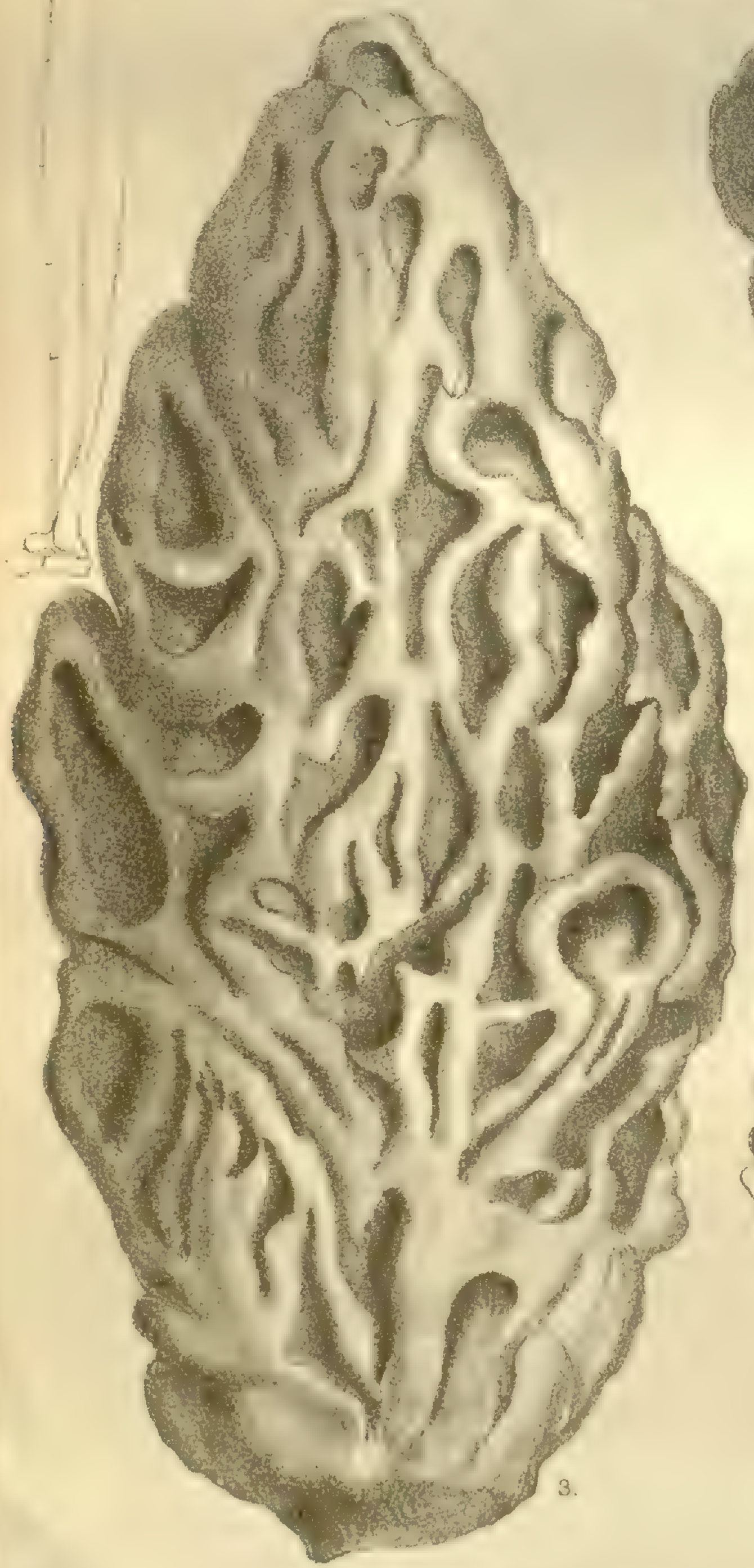

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Gyromitra gigas, *Fr.*

GYROMITRA GIGAS (Krombh.) Cooke.

By William Phillips, F.L.S.

(Plate 334.)

The occurrence in England of so rare a species of the Discomycetes as *Gyromitra gigas* (Krombh.) not only justifies a record in the *Journal of Botany*, but affords an opportunity of revising the descriptions previously published by the light of living examples. Everyone engaged in the study of the fleshy fungi must have frequently felt how unsatisfactory it is to be limited to dried herbarium specimens, which refuse to reassume any near approach to their natural condition when soaked in water, and the consequent impossibility of restoring the more evanescent characters they once possessed. In the case of the species under consideration this applies in an especial manner, on account of the great diversity of form it assumes in the same group of specimens. Size, colour, folding of the hymenium, presence or absence of a stem—all vary within wide limits, so that from only one or two figures of an author a very inadequate idea can be formed of its polymorphous characters.

Gyromitra gigas was originally described by Krombholz as an *Helvella*, from which genus it was removed by Dr. Cooke in his *Mycographia seu Icones Fungorum*, on what appears to be very sufficient ground, *viz.*, the form of the folds of the pileus. There are two records of its appearance in England; the first by the late Mr. Frederick Currey, in a paper entitled "Notes on British Fungi," read before the Linnean Society, June 18th, 1863,* in which he said, "This fine species has occurred once only, in a garden in Blackheath Park. It would seem from Krombholz's figures to vary a good deal in colour. My specimen was brownish yellow." Not a word is said by Mr. Currey in reference to the *size* of the plant, an important character, nor yet of the form of the pileus, which in so variable a species should have been described; and unfortunately the original specimen cannot be traced at Kew. A figure is given of an ascus with its eight sporidia, magnified 220 diameters, from which it appears the sporidia are elliptic, as in *G. esculenta*, filled with granular protoplasm, and an unusually large size. The second recorded occurrence of the species is in the *Annals & Magazine of Nat. Hist.* 1875 (No. 1476), by Messrs. Berkeley and Broome, in these words:—"On the ground. Coed Coch, *Mrs. Lloyd Wynne*, March, 1874." Here again we are not informed what were the more striking features of the plant, and no drawing, as far as I can learn, was made at the time. The original specimen is in the Kew Herbarium, and from it the sporidia are drawn in Dr. Cooke's figure 327, in *Mycographia*; but the figure of the plant which is given in that work is derived from another source; the sporidia are represented as fusiform, and the dimensions 32 × 10–12 μ. Now,

* *Linn. Trans.* xxiv. p. 152, t. 25, fig. 25.

if we turn to Krombholz's figure of the sporidia of *gigas*, we find they are elliptic, and furnished with two guttæ, which characters forbid the idea that the Coed Coch specimen can be the same species. I am informed that Mr. Berkeley had in his herbarium specimens under the name of *H. gigas*, from Professor Trog, of Bern, which have the same fusiform sporidia as the Coed Coch specimen; hence it is probable that, accepting the Swiss plant as the true *H. gigas*, he was induced to refer the British plant to the same species.

Before I proceed to describe a *Gyromitra* found in Oxfordshire, which I regard as the undoubted *H. gigas* of Krombholz, it will be well to reproduce the very ample description of it given by its author in his valuable work.

Gyromitra gigas (Krombh.) Cooke, was described by Krombholz in 1834 as follows:—"*Helvella gigas* Klz. Mit grossem, gelappten, gefalteten oder krausen, blassen, weisslichen oder ochergelben *Hute*, an den *Strunk* fast angewachsenen, angedrückten, etwas hin- und hergebogenen Lappen; mit dickem, zellichten, wachsähnlichen, weisslichen, von aussen grubigen, fast glatten Strunke; mit grossen Schläuchen und eiförmigen grossen Sporen; und mit einem dicken, verbreiteten, wachsartig-filzigen Wurzelgeflechte.

"*Helv. pileo* magno, lobato, undulato, plicato vel crispo, pallido, albido vel ochraceo: *lobis* stipiti subadnatis adpressis subundulatis; stipite crasso, celluloso, ceraceo, albido, extus lacunoso, subglabro; ascis majusculis; *sporis* magnis, ovalibus; *mycelio* ceraceo-tomentoso, crasso, effuso.

"*Beschreibung.* Der Hut dieses grössten unter den bei uns vorkommenden Laurichen ist 4 bis 12 Zoll breit und hoch, höchst wandelbar und unregelmässig. In der Jugend und bei sehr kleinen Exemplaren ist er 3 Zoll breit und hoch, und bildet dann gewöhnlich 20 bis 30 Falten; seine Lappen sind dann an einigen Stellen in die Höhe gezogen, an deren innern Fläche mit ihren Falten an jene des Strunkes theilweise angewachsen, und ihre freien Ränder immer dem Strunke angedrückt. In ältern Pilzen wird der Hut vielfaltig und endlich fast kraus. Die *Falten* beobachten (wie bei allen Arten der Gattung) keine Norm; sie sind verschieden gross, laufen nach den manigfaltigsten Richtungen, anastomosiren jedoch seltener als bei den Morcheln. Die *Felder* sind daher höchst irregulär und nicht mehr mit diesem Namen zu belegen, da sie blosse Falten, und keine regelmässig geschlossene Felder bilden.

"Die *Hutsubstanz* ist eine Fortsetzung jener des Strunkes, jedoch mehr wässrig, gebrechlich, fast wachsartig und durchscheinend. Sie erreicht oft $\frac{1}{4}$ bis $\frac{1}{2}$ Linie Dicke, und ist unmittelbar mit der Schlauchlage (dem Hymenium), welche $\frac{1}{4}$ Linie Höhe erreicht, verschmolzen. Das *Schlauchlager* ist ganz ochergelb gefärbt, und besteht aus grossen, keuligen, 6- bis 8 sporigen Schläuchen mit Nebenfäden. Die *Sporen* selbst sind gross und vollkommen oval.

"Der *Strunk* ist 2 bis 3 Zoll hoch, und $2\frac{1}{2}$ bis $3-\frac{1}{4}$ Zoll breit, aus einer wachsartigen, in dünnen Lagen etwas durchscheinenden, bis 1 Linie dicken Masse gebildet. Sie ist vielfach zellig und grubig,

und bildet da, wo der Zellendurchmesser sehr gering ist, eine flockige, weisse, undurchsichtige Substanz, mit welcher auch die Höhlen der grösseren Zellen flockig ausgekleidet sind. Der ganze Strunk ist so wie der Hut höchst unregelmässig, und sowohl in Hinsicht der Grösse als des Umfanges verschieden; er ist um viel höher als der Hut selbst, und die Hutlappen gehen meist bis auf die Erde herab, oder in das untere Drittheil des Strunkes.

"Das *Mycelium* scheint die unmittelbare Verlängerung des Strunkes zu seyn, und ist gleichfalls zellig, wachsartig, und verbreitet sich tief in die Erde. Nahe dem Mycelium, oder vielmehr von ihm aufwärts, ist der Strunk sammtartig, weiss, welcher haarigkleiige Ueberzug höher hinauf ehr zart wird.

"Die Art ist ihrer Grösse wegen zur *Speise* sehr anwendbar; und kömmt häufig im März und April auf bemoosten Waldplätzen in der Nähe von Prag vor. Sie lässt sich an der Luft gut trocknen, der Hut wird dunkelbraun, der Strunk aber bleibt weiss und dicht."*

In July, 1891, Mrs. S. Coker Beck, of Crowell Rectory, sent me some specimens of an unknown and remarkable fungus gathered at Sherbourne, Oxfordshire, on Lord Macclesfield's property, in a field on a hill-side, under beech trees, having somewhat the appearance of *Sparassis crispa*. The pilei varied in size from 3 in. to 3 ft. in circumference, being in form globose, hemispherical, fusiform, or irregular; in a young stage the folds of the hymenium were of the typical form of *Gyromitra*, but when older they became flattened into broad pendent crisped flounces, resembling fig. 327 in Cooke's *Mycographia;* while young they were creamy-white, often tinged with pale purple, passing with age into pale ochre, and then to fulvous-brown; stem short, thick, or sometimes absent. The flesh was somewhat waxy, and exceedingly brittle. In section there was no sterile axis above the stem, the pileus consisting within of irregular cavities, divided and subdivided by double walls which were clothed with the hymenium. I found the asci to be cylindrical, furnished with eight elliptic sporidia, 10–12 × 6–7 μ; paraphyses slender, somewhat thickened at the apices. In odour and taste it very much resembles the mushroom (*Agaricus campestris*), and the flesh is very slow to decay.

The two young specimens represented in the Plate 334 accompanying these notes have been selected with the intention of showing that the structure of the pileus is that of *Gyromitra;* had a more advanced specimen been selected, it would not have enabled the reader to determine to which genus, *Helvella* or *Gyromitra*, it should be referred.

In conclusion, I venture to think that the many points of agreement between the Oxfordshire specimens and the elaborate description and figures of *H. gigas* given by Krombholz will be considered a sufficient justification for my regarding the two as identical. As regards the plant from Blackheath and from Coed Coch, there is so little light to guide us to a just conclusion, first,

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* J. V. Krombholz, *Naturgetreue Abbildungen und Beschreibungen der essbaren schädlichen und verdächtigen Schwämme*, iii. 28, t. 20, figs. 1—5.

as to whether they belong to *Helvella* or *Gyromitra*, and, secondly, whether they are both the same species, that I will not on this occasion offer any conjecture on the subject, but may return to it again hereafter.

Finally, one word of thanks to Mrs. Coker Beck for taking the trouble to make a long journey to obtain additional specimens when the first were damaged in transit; to Dr. Cooke, for information respecting specimens in the Kew Herbarium; and to Mr. G. Murray, for the like favour with regard to the British Museum.

DESCRIPTION OF PLATE 334.—Fig. 1. A young specimen of *Gyromitra gigas* (Krombh.), showing the typical gyrose structure of the hymenium, nat. size. 2. A section of the same, showing the cavities of the interior of the pileus, which, like those of the exterior, are clothed with the hymenium. 3. An older sessile specimen, to illustrate one of the many forms the species assumes. 4. Ascus and paraphyses, × 400. 5. Sporidia, × 400. 6. Cells of the pseudoparenchyma, × 400.

NOTES ON POTAMOGETONS.

By ARTHUR BENNETT, F.L.S.

(Continued from Journ. Bot. 1892, p. 230.)

IN trying to get together information respecting this genus, there are still several forms about which no satisfactory facts can be ascertained, and it is difficult to ascertain whether there are specimens of these in any herbaria. I shall be grateful for the slightest hint referring to any of these, especially for the loan of specimens.

POTAMOGETON GAUDICHAUDII Chamisso in *Linnæa*, ii. 199 (1827), ("In rivulo dulcis aquæ urbem Agaña in insula Guajan percurrente legit amicissimus Gaudichaud") is one of these.—Chamisso often intimates in what herbaria he has seen his plants, but here he gives no clue, and there are no specimens at Berlin (teste Dr. Schumann). In the *Memoirs of the Boston Society of Nat. Hist.* i. 538 (1869), reproduced in this Journal for 1869, p. 179, Horace Mann names *P. Gaudichaudii* Cham. as found in the Hawaiian Islands, but whether from description, or seeing original examples, I know not.* Of the other species described by Chamisso, I have seen original examples of all, except *P. Nuttalii* and *P. americanus*. I have not succeeded in tracing where the specimens are on which these were founded.

A re-reading of the description of *P. Gaudichaudii* has induced the belief that this may really be conspecific with *P. mucronatus*

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* [Mann seems to have included it in his list under the mistaken notion that the locality was in the Sandwich Islands. Hillebrand (*Fl. Hawaiian Islands*, p. 459) says:—"H. Mann enumerates also *P. Gaudichaudii* Cham., which is referred to *P. lucens* by Kunth (*Enum.* iii. 131), but a reference to his quotation (*Linnæa*, ii. 199) shows that Gaudichaud's plant was collected on the island of Guam or Guajan of the Ladrones."—ED. JOURN. BOT.]

Presl. The Ladrone Islands are quite in the area of its growth, and though Chamisso's description may not exactly agree, still the imperfect material he had to deal with will fully explain the difference; hence I am strongly inclined to think that *P. Gaudichaudii* Cham. will prove to be the proper name for *P. mucronatus* Presl = *P. malaina* Miquel, as it antedates Presl's name by twenty-two years.

P. ANCEPS Muhlenberg, Cat. Pl. Amer. Sept. No. 9 (1813).—I see that Mr. N. E. Brown (*Suppl. Eng. Bot.* p. 56), under *Impatiens biflora* Walt., accepts the above Catalogue for a publication of a name. Is this generally so recognised?* If so, it may alter the nomenclature of several North American species of *Potamogeton*, which I feel sure my friend Dr. T. Morong will be glad to have discussed. I know of no safe reference for this species of Muhlenberg.

Rafinesque, in the New York *Medical Repository*, v. 350,† named several species of N. American Potamogetons; his specimens were apparently lost when he was shipwrecked off the United States coast. Some at least of them have been traced by various means, but about the following I have no certain information:—*P. borealis*, *P. epihydrum*, *P. petiolare*, *P. tenuifolius*.

P. TRICHOIDES Cham. var. COLEOPHYLLUS Franchet, and P. PECTINATUS L. var. ENANTROPHYLLUS Franchet (Camus, *Cat. Plantes de France, Suisse et Belgique*, p. 278, 1888) are two curious errors, arising from M. Camus having mistaken sections for varieties in Franchet's *Flore de Loire-et-Cher*, p. 633: for the knowledge of this I am indebted to Dr. Bonnet, of Paris.

Many of the species described by Wolfgang in Roemer & Schultes *Mantissa*, 3, 1827, have been ascertained, but "*P. divaricatus* = *P. setaceus* Herb. Gilibert" is still unknown. Kunth (*Enum.* iii. 139 (1841)) suggests "*P. obtusifolio* affinis?" *P. rigidus* is another doubtful plant: according to Nyman, *Supp. Consp. Fl. Europ.* p. 286, Lindemann refers this to *P. fluitans*, while Schmalhausen assigns it to *P. petiolatus*—two names that may well mean the same thing. Probably both these species are contained in Lindemann's herbarium, so rich in Russian plants. If not, the species to which they should be referred could likely enough be ascertained from the MS. of Wolfgang's monograph of the genus in the Moscow Library. Neither Nyman nor Richter mention *P. divaricatus*.

Of *P. reptans* Humnicki, *Cat. Pl. Luxeuil*, 61 (1876), nothing is known at Paris (*fide* Dr. Bonnet). Can anyone throw any light on this obscure plant?

P. DRUPACEUS O. F. Lang in *Flora*, p. 472 (1846), is a form of *pectinatus*, identified by Lang himself with "*P. pectinatus* L. *β. drupaceus* Koch in litt."

P. ELEGANS Wallich, *List*, 5178.—The type specimens of this in

---

* [The list is merely one of names, without either descriptions or synonymy, and has no claim to recognition.—ED. JOURN. BOT.]

† This paper is translated by Desvaux in his *Journ. de Botanique*, ii. 166-178.

Wallich's herbarium at the Linnean Society prove it to be *P. polygonifolius* Pourr. !

P. SERRULATUS "Regel et Maack (?)" (*Tent. Fl. Ussur.* p. 139 (1861)).—"Habitus omnino *P. obtusifolii.*" This is exactly the plant that has often been named *P. obtusifolius* in Britain; Mr. Watson's herbarium at Kew contains specimens so named by him. The likeness to *obtusifolius* is remarkable, and the error may well be excused. It is, however, a form of *P. crispus* L. *P. serrulatus* Bunge, "Asia temp.," I have not seen, unless it be the same as Regel and Maack's plant.

P. CASPARYI F. Kohts in *Oesterr. Bot. Zeit.* xx. 291 (1870).—Is this the same as *P. alpinus* Balbis = *P. rufescens* Schrad. ? Richter (*Pl. Europ.* p. 13) makes it a full species, limited to Germany. I should be glad to see a specimen.

Weyl, in *Oesterr. Bot. Zeit.* 1870, p. 321, says, on Dr. Ascherson's authority, that this species is nothing more than *P. alpinus* Balbis. This merely adds another synonym, and Dr. Ascherson might have been safely followed by Dr. Richter.

By the kindness of Dr. Magnin, I possess a specimen of *P. cæspitosus* Humnicki, *Cat. Pl. Luxeuil* (1876). The specimen is not sufficient to speak with any confidence as to its being a distinct species. It is evidently a departure from *pusillus* L. in the direction of my *P. Sturrockii*, and is decidedly badly placed as a subspecies under *rutilus*, of which it has none of the characteristic marks. It will be better placed under *pusillus*.

Mr. Clement Reid has called my attention to the names given under *Potamogeton* in Schimper's *Paléontologie Végétale*, vol. ii. pp. 462–469 (1871), where the following should be renamed by palæontologists as bearing names belonging to recent plants; *i. e.*, *P. acuminatus* Ettingsh., *P. ovalifolius* Ettingsh., *P. filiformis* Saporta, *P. lucidus* Saporta, *P. enantophyllus* Saporta; this last hardly differing from the name of the section of the genus in Franchet's *Flore de Loire-et-Cher*, p. 633 (*Enantiophyllum*). It is greatly to be desired that palæontologists would ascertain whether proposed names are preoccupied by recent plants. Personally, I should be glad to give them this information in Britain, and I have no doubt Prof. Ascherson, of Berlin, would do so for Europe, and Dr. T. Morong, of Columbia College, New York, for America.

Another plant that Chamisso names as from the Isle of France, I have from the Mauritius, by the kindness of Dr. H. H. Johnston, but unfortunately there are no flowers or fruit on the specimens; this may be the plant named "*P. lucens*" in Mr. Baker's *Flora of Mauritius*, but I have not yet seen specimens of that plant.

(To be continued.)

COLLECTORS' NUMBERS.

By C. Baron Clarke, F.R.S.

The citation of collectors' numbers was carried far by Nees in Wight's *Contributions* as long ago as 1834 (and very likely before that date), but it has now become a prominent feature in systematic monographs, as see DC. *Monographies*, vv. 6, 7 (in v. 7 the index to collectors' numbers is unfortunately wanting).

It is supposed that each collector affixes his field-numbers continuously, during his whole life, not repeating any number twice; that he places the same number on all the pieces cut from one tree or shrub; and that, in regard to small plants, he affixes the same number to a series of these only when, from their being collected at the same time and place, he feels morally certain that they are all one species and one form.

Supposing this method of numbering carefully followed, the utility of the citations of such numbers (when indexed) is great. Firstly, in a large herbarium one is enabled, with regard to all fairly common species, to find out very accurately what the monographer understood by some named species or variety he adopts. Secondly, in regard to the rare species, it is frequently possible to get "the type" described from. Thirdly, in the common case where a large collection is distributed with numbers, not (or only partially) named, the assistants in the large herbaria can name up quickly plants described by a monographer subsequent to the distribution. This is a great saving of labour; if the assistant has to name up a genus of numerous closely-allied species from the *descriptions* of the monographer (without numbers), much time is occupied in doing the work of examination over again, and in the result the plants are not named so satisfactorily as by numbers, *i. e.*, if the collectors' numbers are properly affixed, as above described.

But unfortunately, while many of the best collections, as Balansa, Mandon, Curtiss, Thwaites, are properly numbered, the majority of collections, especially the European collections, are not. Moreover, it has been customary in many of the foreign herbaria to destroy or cut off the collectors' tickets, and to affix herbarium numbers instead. The citation of these herbarium numbers, as of Willdenow's herbarium numbers, has been disastrous, and has brought the citation of *good* collectors' numbers into unmerited disfavour. The second-hand botanic writers, proceeding on their favourite theorem that things which are equal to the same thing are equal to one another, have evolved out of these citations of herbarium numbers, reductions and new species. This artificial synonymy is largely erroneous, and most tedious to correct.

I am somewhat surprised, on referring to Bentham's (and some other) directions about collecting, no distinct instruction given how the field-tickets should be numbered; and the object of this letter is to supply this instruction (till more authoritative be issued).

The best way to commence may be perhaps to show first how not to do it right.

The worst of all plans is that adopted by Wallich and by many modern European collectors. In this plan a quantity of material from various localities is got together; it is then sorted into genera, then into species; all the material of one (supposed or estimated) species is well mixed, and then issued under one number. If a sheet of this kind has to be named, it is necessary to examine every scrap on the sheet (a tedious waste of time). If it happens that several species (or varieties, or even "forms") are mixed under the number, it is useless for citation. The numbers of Wallich, as to the "type" sheet in his large-paper collection, are cited sometimes in the *Flora of British India*; but the chief value of such citations is to direct a person in London where to go to see the "type" of the species described. It is not at all safe to name Wallich's sheets at Calcutta from such citations.

Another favourite plan with collectors since the days of Sieber is to commence a fresh numbering from No. 1 on every excursion. We thus get a specimen numbered (instead of 8375, say) "Iter Madagascarense Secundum, series 3, n. 94." The effect of this is that so long a number is rarely worth citation; our monographs have become laboured even with the citing of simple numbers, and it is quite impossible to cite these series and centuries generally. Where they have to be cited, I usually cite the number "94" ONLY; it is true that there may be other plants numbered 94; but if I cite the n. 94 for a sedge, the other 94s may be roses or onions; if another 94 is a sedge, it may be a *Scirpus*, while my cited n. 94 is a *Carex*; it is very rarely that the two 94s will be two sedges so closely allied as to cause any confusion. It is where externally similar plants have been sorted together and then numbered alike that the mischief has been done.

It would be tedious to enumerate the varied plans of authors for making their field-numbers useless; some use fractional numbers—often with very high denominators. In some cases the numerator may represent the number of the genus in the collector's own private index to genera, while the denominator may represent the number of the species in the genus, or in some private list of the collector. At all events, such large complex numbers can very rarely be worth citing—indeed, only when the plant happens to be some very critical form which the monographer wishes to fix down.

But of all the field-numbers I have encountered, the European collectors are far the worst. I can rarely, in all the herbaria I have journeyed to, get enough field-numbers for a common European *Scirpus* or *Eleocharis* to present a good or sufficient picture of the geographic area of the species. I should estimate that not one European plant in seven in the large European herbaria, Berlin, &c., has a field-ticket on it to show the three points—(1) collector's name; (2) number; (3) where collected. Many of the plants do not pretend to this minimum of information—they are ticketed, "Flora of Germany and France, second distribution of Meyer, n. 2171." Here there is no attempt at deception; it is told one

that it is useless for any object to occupy space by citing the number. But it is still more disheartening, after getting together (apparently) "good" numbers of various collectors from various localities, to find at the end of the labour, from the remarkable identity in the numbers, that they are not field-numbers at all; that they are taken from some list, and that the utmost they prove is that the collector supposed his plant (or one of the plants so numbered) to be included in the binominal symbol of that list. It is troublesome to find the list used; difficult (and rarely worth while) to discover what were the supposed limits of the species in that list.

The outcome is that, in the case of Europe, I often find it impossible to decide what is the geographic area of some common well-defined species, say, *Eleocharis multicaulis* Smith, even to within a possible error of 200–400 miles. I can of course determine the area by the arm-chair-and-coffee method—by simply compiling the authorities. But the best authority is not to be trusted one inch in such a matter. I should not wish to state that *Eleocharis multicaulis* grew in the Atlas unless I had seen a specimen collected there, and I should wish then to cite that specimen with the collector's name and genuine field-number. As a matter of fact, a very considerable percentage of *Eleocharis multicaulis* was (six years ago) named wrongly in Kew and South Kensington, and I need therefore add no further statement how it was named elsewhere.

But, says Mr. J. G. Baker, "you work on critical weeds, sedges, Commelinaceæ, and such-like—your experience in mixed numbers is exceptional." To which I reply, are your *Crocus* and *Iris* less critical, and are your ferns better numbered? The South American and Indian ferns are much better numbered than the European. There are not many plants in herb. H. C. Watson that have a field-ticket showing the collector, the place of collection, and the field-number. My own field-tickets run continuously from 1 to 47388; they have been almost invariably placed on each sheet within twenty-four hours of collection. Where the specimens were all cut from one tree, the sheets are numbered 2383 A, 2383 B. And small plants, collected at one time and place (I always collect with my own hands), are similarly numbered 2384 A, 2384 B—where I felt morally sure that I had exactly the same *form*. But where a male tree was supposed to belong to a female hard by, I always gave them different numbers, and added a note that I supposed them one species. I do not know that I could, even from long experience, greatly improve on this plan; I believe it would be better, after reaching 9999, to begin at 1 over again; five digits cause a sensible delay, in transfer and citation, over four digits; as explained above, the having two numbers 2773, referring one to a sedge, the other to something widely different, would lead to no confusion.

I have generally cut out from my present work all citations of my own herbarium numbers; for, as I issue all my plants named up my own way, no person who gets one can ever be assisted by the citation of the number. I am led thus to the curious conclusion

that, unless numbered plants were issued named either wrongly or not at all, no number would be worth citing.*

I may add, for the guidance of collectors, that different collectors' numbers (*i. e.*, good numbers) serve different purposes under different systems of collection. Glaziou, for instance, often collects one or two pieces only of a species at each locality, though he may collect the species over and over again. Such numbers are very useful for defining the area of a species; but when they get scattered (as they do) in distant collections, it is difficult to ascertain a species founded on one of them! On the other hand, Balansa appears, when he had an opportunity, to have laid in a great quantity of one plant finely collected under the number. Such numbers are very valuable for "finding where you are" in a large and critical genus in any herbarium. No doubt collectors endeavour to attain both objects; but the opportunities of collecting and carrying off large quantities of well-preserved specimens in remote solitudes are rare. To make the most of such requires in the collector strength, zeal, judgment, experience, but, and beyond all, a good general acquaintance with the Flora, so as to be able to recognise a new or uncommon form when he comes upon it.

A PROVISIONAL LIST OF THE MARINE ALGÆ OF THE CAPE OF GOOD HOPE.

By Ethel S. Barton.

(Continued from p. 114.)

Phlebothamnion squarrosum Kütz. Cape, *fide Kützing*.

Spermothamnion Schmitzianum, n. sp. Frons nana, filis primariis repentibus, secundariis tenuissimis, erectis, ramosis, ramis suboppositis simpliciusculis; sphærosporis terminalibus.

Hab. in *Halimedæ* fronde, ad Prom. b. Spei. Coll. H. A. Spencer.

I have named this species after Dr. Schmitz, of Greifswald, who has kindly assisted me in many difficulties about *Florideæ*.

Chantransia secundata Thur. On *Laminaria*, near Cape Town, *Tyson*!

Geogr. Distr. North Sea. Atlantic.

Cryptonemiaceæ.

Schizymenia erosa J. Ag. Simon's Bay, *Pappe*.

S. apoda J. Ag. Table Bay, *Pappe*.

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* There is an exception to this which I have lately met with so frequently that it must modify the above conclusion: *viz.*, that new species are not rarely founded on a single specimen issued, say, as 8375 E. *Scirpus lacustris* Linn., and this number cited as the type of the species. There is thus a very possible advantage in citing the numbers of the very commonest species, even when issued correctly named.

S. OBOVATA J. Ag. Cape, *Pappe*.

S. UNDULATA J. Ag. Table Bay, *Pappe*.

NEMASTOMA LANCEOLATA J. Ag. Cape, *Harvey*, *Pappe*.

PACHYMENIA CARNOSA J. Ag. Camps Bay, *Pappe*! Cape Agulhas, *Hohenack*.! Nos. 175, 372. Cape, *T. Steel*! *Hb. Kew*! *Areschoug*, Phyc. extraeurop. exsicc. No. 55.

POLYOPES CONSTRICTUS J. Ag. Cape Point, *Boodle*! Cape, *Harvey*!
Geogr. Distr. Australia.

GRATELOUPIA FILICINA Ag. Sea Point, *Harvey*, *Tyson*! Cape Point, *Boodle*! Kalk Bay, *E. Young*! *Boodle*! Cape Agulhas, *Hohenack.*! Cape, *Harvey*! Knysna, *Krauss*.
Geogr. Distr. Atlantic. W. Indies. Indian Ocean. Mediterranean.

G. HIEROGLYPHICA J. Ag. Table Bay, *Pappe*.

THAMNOCLONIUM LATIFRONS Endl. et Dies. Port Natal, *Pöppig*.

T. NATALENSE J. Ag. Port Natal, *Gray*.

GIGARTINEÆ.

CHONDRUS SCABIOSUS Kütz. Cape, *fide Kützing*.

C. DIVARICATUS Grev. Cape, *Kunth*.

C. CRISPUS Lyngb. Table Bay, *Ecklon*. Port Alfred, *W. Carr*!
Geogr. Distr. North Atlantic. W. Indies.

C. AGATHOICUS Kütz. (non Lam.). Cape, *fide J. Agardh*.

IRIDÆA ORBITOSA Suhr. Cape, *Drege*! *Harvey*!

I. AUGUSTINÆ Kütz. (non Bory). Cape, *Gaudichaud*.

I. SERRATIFOLIA J. Ag. Table Bay, *Pappe*!

I. CAPENSIS J. Ag. Seal Island, *Challenger*! Table Bay, Simon's Bay, *Hb. Greville*, *Suhr*, *Pappe*.

I. LANCEOLATA Harv. = I. CAPENSIS J. Ag.? Table Bay, *Harvey*! Cape, *Pappe*! *Zeyher*!

I. CORDATA J. Ag. Cape, *Drege*!
Geogr. Distr. North Pacific.

I. CURVATA Kütz. Cape, *Pappe*.

I. CORNEA Kütz. Cape Agulhas, *fide Kützing*.

I. LAMINARIOIDES Bory. Cape Point, *Boodle*! Sea Point, *Boodle*!
Geogr. Distr. North and South Pacific.

I. UNDULATA J. Ag. Table Bay, *Pappe*!

I. GIGANTEA Kütz. Cape, *fide Kützing*.

I. INSIGNIS Endl. et Dies. (? = *Gigartina* sp.). Port Natal, *Pöppig*.

GIGARTINA PISTILLATA J. Ag. Algoa Bay, *Ecklon*.
Geogr. Distr. Atlantic.

G. FASTIGIATA J. Ag. Robben Island, Sea Point, Cape Point, *Boodle*! Kalk Bay, *E. Young*! Natal, *Krauss*. Cape, *Harvey*!
Geogr. Distr. Mauritius.

G. VOLANS Ag. Cape, *Chamisso*.

G. RADULA Ag. Robben Island, *Boodle*! Kalk Bay, Sea Point, *Boodle*! Knysna, *Krauss*, *Boodle*! Cape, *John Staremburgh*! in Hb. Sloan. 257, fol. 167, *Ecklon*, *R. Brown*! *Areschoug*, Phyc. extraeurop. exsicc. No. 50, *Hb. Dickie*! *Harvey*! *Robertson*, *John Reeve*!

Var. HYSTRIX. Robben Island, *Boodle*! Cape, *Hohenack.*! *Harvey*!

Var. CLATHRATA. Robben Island, *Boodle*! Cape, *Hohenack.*!
Geogr. Distr. Australia.

G. STIRIATA J. Ag. Table Bay, *fide Suhr*. Sea Point, Cape Point, Kalk Bay, *Boodle*! False Bay, *Challenger*! Cape Agulhas, *Hohenack.*! No. 564. Cape, *Thunberg*, *Ellis*! *Menzies*! *Areschoug*, Phyc. extraeurop. exsicc. No. 12, *Harvey*! *John Reeve*! *Hb. Dickie*! *Hb. Shuttleworth*! *Scott Elliot*! *Reliquiæ Brebissonianæ*! Ser. 2, No. 188.

G. BURMANNI J. Ag. Simon's Bay, *Challenger*. Sea Point, *Tyson*! *Areschoug*, Phyc. extraeurop. exsicc. No. 51.

G. NODIFERA Her. Natal, *Krauss*.

G. TEEDII Lam. Port Alfred, *Slavin*!
Geogr. Distr. Warm Atlantic. Mediterranean. Red Sea.

GYMNOGONGRUS CORYMBOSUS J. Ag. Cape Point, *Boodle*! False Bay, *McMillan*! Cape, *Harvey*!
Geogr. Distr. Indian Ocean.

G. GLOMERATUS J. Ag. Cape, *Lalande*, *Pappe*.
Geogr. Distr. Ceylon. Mauritius.

G. CAPENSIS J. Ag. Table Bay, *Pappe*! Cape Point, *Boodle*! Kalk Bay, *Boodle*! Cape Agulhas, *Hohenack.*! Knysna, *Boodle*! Cape, *Harvey*! *Ecklon*.
Geogr. Distr. W. Indies. Mauritius.

G. VERMICULARIS J. Ag. Cape Town, *Burchell*! Gordon's Bay, *Ecklon*. Cape, *Harvey*!
Geogr. Distr. Mauritius. South Pacific.

G. POLYCLADUS J. Ag. Kalk Bay, *Boodle*! Cape, *Hb. Kew*!

G. DILATATUS J. Ag. Table Bay, *Pappe*! Green Point, *Harvey*! Cape Point, *Boodle*! Gordon's Bay, *Ecklon*. Cape, *Dreye*, *Brand*, *Villet*, *Areschoug*, Phyc. extraeurop. exsicc. No. 46, *Harvey*! *Hb. Hooker*!
Geogr. Distr. W. Indies.

PHYLLOPHORA DIVERSIFOLIA Suhr. Cape, *Dreye*.

KALLYMENIA CAPENSIS J. Ag. = EUHYMENIA CAPENSIS Kütz. Cape, *Hb. Holmes*!

K. EROSA Harv. Green Point, *Harvey*!

K. REPTANS J. Ag. Algoa Bay, *Ecklon*. Natal, *Krauss*.

K. DENTATA J. Ag. Cape Agulhas, *Hohenack.*! No. 222. Algoa Bay, *Ecklon*. Cape, *Hb. Hepp*!

K. HARVEYANA J. Ag. Table Bay, *Harvey*! Cape Point, *Boodle*! Cape, *Harvey*!

K. SCHIZOPHYLLA Harv. (non Kütz.). Table Bay, *Harvey*! Port Natal, *Keil*!

K.? LUBRICA = HALYMENIA LUBRICA Suhr. Algoa Bay, *Ecklon*.

? EUHYMENIA FILIFORMIS Kütz. Cape, *Wenek*!

CALLOPHYLLIS FASTIGIATA J. Ag. Cape Agulhas, *Hohenack*.!

Geogr. Distr. Falkland Islands.

C. LACINIATA J. Ag. Batterie Amsterdam, *Ecklon*.

Geogr. Distr. Atlantic and North Sea. West Indies. Pacific?

C. DISCIGERA J. Ag. Table Bay, *Pappe*! Sea Point, *Boodle*! False Bay, *Villet*! Knysna, *Krauss*. Cape, *Gueinzius*, *Harvey*! *Areschoug*, Phyc. extraeurop. exsicc. No. 49.

Geogr. Distr. W. Indies. Mauritius.

DUMONTIACEÆ.

HALOSACCION RAMENTACEUM J. Ag. Cape, *Chavin*! I have only seen one specimen of this plant from the Cape, and can find no other record of it from there.

Geogr. Distr. Atlantic, Pacific, and Arctic Oceans.

SPYRIDIEÆ.

SPYRIDIA SQUALIDA J. Ag. Port Alfred, *Slavin*!

Geogr. Distr. South Australia.

S. CUPRESSINA Harv. Algoa Bay, *Holub*! Port Alfred, *Slavin*! Kei Mouth, *Flanagan*!

S. INSIGNIS J. Ag. Port Alfred, *Slavin*! Port Natal, *Krauss*.

Geogr. Distr. Indian Ocean.

S. FILAMENTOSA Harv. Port Natal, *Krauss*.

Geogr. Distr. Throughout tropical and subtropical seas.

CHAMPIEÆ.

CHAMPIA COMPRESSA Harv. Kalk Bay, *Boodle*! Muysenberg, *Harvey*! Cape Agulhas, *Hohenack*.! Knysna, *Boodle*! Algoa Bay, *Ecklon*. Port Alfred, *Slavin*!

Geogr. Distr. Indian Ocean. Warm Pacific. Australia.

C. LUMBRICALIS Ag. Robben Island, *Boodle*! Table Bay, *Tyson*! Sea Point, Cape Point, *Boodle*! Cape Agulhas, *Hohenack*.! No. 567. Cape, *Thunberg*, *Koenig*, *Drege*! *Brand*! *Parreyss*! *Areschoug*, Phyc. extraeurop. exsicc. No. 44; *Harvey*! *Hb. Dickie*! *Hb. Shuttleworth*! *W. Ferguson*! *Gourlie*! *Hofman-Bang*! *Reliquiæ Brebissonianæ*!

RHODYMENIACEÆ.

HYMENOCLADIA POLYMORPHA J. Ag. Port Alfred, *Slavin*!

Geogr. Distr. Australia.

EPYMENIA OBTUSA J. Ag. Table Bay, Muysenberg, *Harvey*! Cape, *Drege*.

Geogr. Distr. South Pacific. Cape Horn. Marion Island.

RHODYMENIA PALMETTA J. Ag. Algoa Bay, *Ecklon*.

Geogr. Distr. Atlantic. Adriatic.

PLOCAMIUM COCCINEUM Lyngb. Table Bay, *Wenek*! Kalk Bay, *E. Young*! *Boodle*! Algoa Bay, *Ecklon*. Natal, *Krauss*. Cape, *Harvey*! *Scott Elliot*!

Geogr. Distr. N. Atlantic. N. Pacific. W. Indies. Australia. Tasmania.

P. RIGIDUM Bory. Muysenberg, *Harvey*! Cape, *R. Trimen*! *Hb. Kew*!

P. GLOMERATUM J. Ag. Cape, *Hb. Kew*! *Scott Elliot*!

P. SUBFASTIGIATUM Kütz. Natal, *fide Kützing*.

P. COSTATUM J. Ag. Cape, *Hb. Dickie*!

Geogr. Distr. Australia. Tasmania. New Zealand.

P. MERTENSII Grev. Cape, *Hb. Dickie*!

Geogr. Distr. Australia. Tasmania.

P. CORALLORHIZA J. Ag. Robben Island, *Tyson*! Cape Point, *Boodle*! *E. Young*! Cape Agulhas, *Hohenack.*! No. 196. Knysna, *Boodle*! Cape Recife, *Bowerbank*! Port Alfred, *Carr*! *Slavin*! Kei Mouth, *Flanagan*! Natal, *Krauss*. Cape, *Ecklon*! *Gueinzius*! *Lind*, *Harvey*! *Hb. Wenek*! *Hohenack.*! No. 596.

P. NOBILE J. Ag. Simon's Bay, *R. Brown*! Cape Recife, *Bowerbank*! Cape, *Hb. Dickie*!

P. CORNUTUM J. Ag. Table Bay, *Harvey*! Sea Point, *Tyson*! Kalk Bay, *Pappe*! *Boodle*! *E. Young*! Camps Bay, *Ecklon*. Cape, Agulhas, *Hohenack.*! No. 597. Natal, *Krauss*. Cape, *Burchell*, *Harvey*! *Hb. Dickie*!

P. PROCERUM Suhr. Cape, *fide Bory*. Algoa Bay, *Ecklon*. Natal, *Krauss*.

Geogr. Distr. Australia. Tasmania.

P. MEMBRANACEUM Suhr. Cape, *Suhr*, *Freycinet*.

DESMIA TRIPINNATA J. Ag. Natal, *Krauss*! No. 321. St. Sebastian Bay, *Miss Borcherds*!

D. HORNEMANNI J. Ag. False Bay, *Miss McMillan*! Cape Agulhas, *Hohenack.*! No. 398. Algoa Bay, *Ecklon*, *Holub*! Port Alfred, *Slavin*! *Carr*! Port Natal, *Gueinzius*, *Sanderson*!

OCHTODES CAPENSIS J. Ag. Cape, *Hb. Crouan*.

RHODOPHYLLIS CAPENSIS Kütz. Cape, *Hb. Hofman-Bang*, *Suhr*, *Areschoug*, *Pappe*.

SQUAMARIACEÆ.

PEYSSONELIA SQUAMARIA Dcne. Natal, *Krauss*, *Gueinzius*!

Geogr. Distr. Atlantic (Europe). Mediterranean.

P. REPLICATA Kütz. Natal, *Gueinzius*.

P. MAJOR Kütz. Port Natal, *Gueinzius*.

P. CAULESCENS Kütz. Natal, *Gueinzius*. Agardh regards these three species of Kützing as doubtful.

HILDENBRANDTIACEÆ.

HILDENBRANDTIA ROSEA Kütz. Sea Point, *Boodle*!

Geogr. Distr. Shores of Northern Europe.

SPHÆROCOCCOIDEÆ.

TYLEIOPHORA BECKERI J. Ag. Cape, *Hb. Holmes*! Port Alfred, *Slavin*!

PHACELOCARPUS OLIGACANTHUS Kütz. Cape, *fide Kützing*.

P. TRISTICHUM J. Ag. Port Alfred, *W. Carr*!

P. LABILLARDIERII J. Ag. Port Alfred, *Slavin*! Cape, *Hb. Dickie*!
Geogr. Distr. Australia. Tasmania. New Zealand.

P. TORTUOSUS Endl. et Dies. Cape Agulhas, *Hohenack.*! No. 247. Port Natal, *Pöppig*. Cape, *Hohenack.*! No. 450.

DICURELLA AFFINIS J. Ag. Robben Island, Kalk Bay, Cape Point, *Boodle*! Cape, *Hb. Dickie*! *Scott Elliot*!

D. FLABELLATA J. Ag. Table Bay, *Pappe*! Cape Point, *Boodle*! Sea Point, *Tyson*! Cape Agulhas, *Hohenack.*! Nos. 246, 561. Cape, *Areschoug*, Alg. extraeurop. exsicc. No. 39; *Harvey*! *Hb. Dickie*!

D. FRAGILIS J. Ag. Robben Island, *Boodle*! Table Bay, *Pappe*! *Tyson*! Cape Point, *Boodle*! Cape Agulhas, *Hohenack.*! No. 245. Knysna, *Krauss*. Algoa Bay, *Ecklon*. Port Alfred, *Slavin*! Cape, *Gaudichaud*, *Areschoug*, Phyc. extraeurop. exsicc. No. 14; *Harvey*! *Reeve*! *Hb. Dickie*!

GRACILARIA MULTIPARTITA J. Ag. Natal, *Krauss*.
Geogr. Distr. Warmer Atlantic (Europe and America). Indian Ocean. W. Indies. New Zealand.

G. CONFERVOIDES J. Ag. Cape, *Gaudichaud*, *Hb. Dickie*!
Geogr. Distr. Throughout all seas.

SARCODIA CAPENSIS J. Ag. Cape, *Holub*! *Hb. Kew*!

CALLIBLEPHARIS FIMBRIATA J. Ag. Cape Agulhas, *Hohenack.*! No. 393. (This specimen is labelled *C. ornata* Kütz., but the species does not hold good, being merely a form of *C. fimbriata* J. Ag.) Algoa Bay, *Ecklon*, *Burchell*! Port Alfred, *Carr*! *Slavin*! Cape, *Gaudichaud*, *Zeyher*! *Trimen*! *Hb. Wenek*! *Kitching*!

HERINGIA MIRABILIS J. Ag. Robben Island, *Boodle*! Table Bay, Gordon's Bay, *Ecklon*. Sea Point, *Harvey*! Cape Point, *Tyson*! Camps Bay, *Reynolds*! Knysna, *Krauss*, *Boodle*! Algoa Bay, *Holub*! Port Alfred, *Carr*! Cape, *Gaudichaud*, *Drege*! *Hb. Dickie*! *Harvey*! *Hohenack.*! No. 344.

DELESSERIEÆ.

HOLMESIA CAPENSIS J. Ag. Cape, *Hb. Holmes*!

NITOPHYLLUM REPTANS Crn. Cape Point, *Boodle*! Cape, *Hb. Dickie*!
Geogr. Distr. North Atlantic. Mediterranean.

N. PLATYCARPUM J. Ag. Robben Island, *Boodle*! Table Bay, *Harvey*! Cape Point, *Boodle*! Green Point, *Harvey*! Camps Bay, *Reynolds*! *Tyson*! Cape Agulhas, *Hohenack.*! No. 598. Knysna, *Krauss*. Algoa Bay, *Holub*! Cape, *Areschoug*, Phyc. extraeurop. exsicc. No. 38; *Hb. Lenormand*! *Brand*, *Drege*, *Harvey*! *Reeve*! *Scott Elliot*!
Geogr. Distr. Falklands. Vancouver. W. Indies.

N. UNDULATUM Kütz. Simon's Bay, *Challenger* !

N. FISSUM Grev. Table Bay, *Boodle* ! Camps Bay, *Reynolds* ! Knysna, *Krauss*. Cape, *Harvey* !

N. VENOSUM Harv. Table Bay, *Harvey*, *Pappe* ! Cape, *Harvey* ! *Hb. Dickie* !

N. CAPENSE Harv. Table Bay, *Harvey* !

N. UNCINATUM J. Ag. Cape, *Ecklon*. Kei Mouth, *Flanagan* !
Geogr. Distr. Australia. New Zealand.

N. ACROSPERMUM J. Ag. Cape, *Harvey*, *Hb. Suhr*, *Hb. Areschoug*.

N. PINNATIFIDUM Suhr. Algoa Bay, *Ecklon*.

N. SERRATUM Suhr. Cape, *fide Suhr*.

N. MACULATUM Sond. Cape, *Hb. Binder*, on *Cladophora Eckloni*.

NEUROGLOSSUM BINDERIANUM Kütz. Hout Bay, *Harvey* ! Camps Bay, *Reynolds* ! Cape Agulhas, *Hohenack*. !

RHODOSERIS LACINIATA Harv. Cape, *Harvey* !

BOTRYOCARPA PROLIFERA Grev. Robben Island, *Boodle* ! Table Bay, Sea Point, *Harvey* ! Cape Point, *Boodle* ! Cape, *Hornemann*, *Areschoug*, Alg. extraeurop. exsicc. No. 34; *Reeve* !
Geogr. Distr. Southern seas.

DELESSERIA IMBRICATA Aresch. Port Alfred, *J. Slavin* ! This specimen differs slightly from the typical *D. imbricata* Aresch., but not sufficiently to form a new species.
Geogr. Distr. Australia.

D. OVIFOLIA Kütz. Cape, *Suhr*.

D. RUSCIFOLIA Lamour. Sea Point, *Tyson* ! Natal, *Krauss*. Cape, *Harvey* !
Geogr. Distr. N. Atlantic. Mediterranean. W. Australia.

HELMINTHOCLADIACEÆ.

HELMINTHORA DIVARICATA J. Ag. Cape, *Hb. Dickie* !
Geogr. Distr. Atlantic (Europe and America). W. Indies. Mediterranean. Australia.

SCINAIA FURCELLATA Bivon. Cape Point, *Boodle* !
Geogr. Distr. Atlantic (Europe and America). W. Indies. Mediterranean. Australia.

S. SALICORNIOIDES J. Ag. Port Natal, *Gueinzius*.

GALAXAURA UMBELLATA Lam. Natal, *fide Kützing*.
Geogr. Distr. Warm Atlantic. Australia.

G. OBTUSATA Lam. Port Elizabeth, *Spencer* ! Algoa Bay, *Bowerbank* ! Port Natal, *Krauss* ! *Gueinzius* !
Geogr. Distr. Warm Atlantic.

(To be continued.)

BRITISH HAWKWEEDS.

By Edward F. Linton, M.A., and Wm. R. Linton, M.A.

The plants to which the following notes refer were mainly gathered between 1889 and 1891, parts of Aberdeenshire, Forfarshire and Dumfriesshire having been worked over in the two earlier years, and all the time given to Hawkweed collecting in 1891 having been devoted to Mid-Perth. We have already published in this Journal the observations on new stations, &c., which were safely to be made without waiting for the results of cultivation or further study; and now we would place on record the results attained by growing roots of doubtful plants, and careful comparison with types of unascertained specimens. These, though they may appear numerous, do not embrace all that we have collected of doubtful character; some puzzles still remain unsolved, which we hesitate as yet to describe as new species or varieties.

We take this opportunity of expressing our great obligation to Mr. F. J. Hanbury for according us on many occasions the freest access to his magnificent collections of Hawkweeds, and giving us the benefit of his opinion in frequent discussion and correspondence, and also for occasionally forwarding our specimens to Dr. C. J. Lindeberg for determination. In a few cases a name occurred to us for some of Mr. Hanbury's numerous doubtful plants, and at his request we incorporate in our paper some of these identifications which appear to extend the distribution of the species.

It remains to add that the few species and varieties here published for the first time are not described in any case by us collectively, but by one or other of us separately; and for this reason the name of the actual author is always appended to the n. sp. or nov. var.

We add the usual * to denote new county or v.-c. records, prefixing it to the name of the county rather than the species, since in several cases more than one county is given for a plant. We must also premise that when so many collectors have been at work on the genus the last few years, it is not unlikely that some of these supposed records may have been published elsewhere before. On the other hand, it is possible that some of those not marked with an asterisk are new to the county or v.-c.

H. graniticolum, n. sp. A plant gathered in Corrie Etchachan, under Ben Muich Dhui, S. Aberdeen, in 1884, and again in 1889, belonging to the *alpinum* section, does not agree with any named species. It may possibly coincide with Prof. Babington's *H. melanocephalum* Tausch., v. *insigne*, but the description of this in the 8th edition of the *Manual* is too brief to admit of certain identification. Our plant being about equally allied to *H. gracilentum* Backh., *H. alpinum* Backh., and *H. eximium* v. *tenellum* Backh., cannot be made a var. of any one of them. It is therefore proposed to name it specifically at present, and it will stand as *H. graniticolum* W. R. Linton. Green; stem 1–3-headed, floccose,

setose, with many patent black-based hairs; root-leaves ovate-spathulate, with a few coarse teeth in the lower half, and cuneate base; inner leaves lanceolate, with large coarse teeth, rounded or blunt at the apex, with white hairs at the margin and partially on upper and lower surfaces, narrowed into winged petioles. Stem-leaf solitary, linear, with one or two linear bract-like leaves above; involucre rounded, thickly shaggy, with black-based hairs; setæ only at the base; phyllaries (outer adpressed) broad, blunt or slightly acute, white-tipped; ligules light yellow, strongly pilose at the tips; styles nearly pure yellow. The leaves form a close rosette at the base, the primordial and outer being coriaceous, and more or less glabrous on the surface. The stem stands six inches clear of the rosette in well-grown wild specimens. The heads, by their shape, recall *H. globosum* Backh.

H. gracilentum Backh. Two or three miles N. of Ben Lawers, Glen Lyon; also in Coire Ardran, very fine; two new stations, we believe, for Mid-Perth, where this species is scarce.

H. nigrescens Backh., var. *gracilifolium* F. J. Hanbury. We gathered this on Craig Caillich, and on the Cam Chreag rocks, near Killin; in Coire Ardran, near Crianlarich; on Ben Lawers, above Loch-na-Chait, and on the Glen Lyon side of Ben Lawers; all in Mid-Perth.

H. Marshalli Linton. Besides the original station, near Loch Lee, we have found this in Glen Fiagh, 12–15 miles away, and in a different watershed. Also on Ben-na-Bourd, *S. Aberdeen, a less hairy plant, but differing in no essential character. This was gathered in 1887, and laid in with forms of *H. nigrescens*. A *nigrescens*-like plant with deep yellow flowers, gathered on the Glen Lyon side of Meall Ghaordie, *Mid-Perth, has eventually been identified by us as this species. The colour of the ligules, though appearing of a much deeper shade of yellow than dried specimens from Forfar, agrees well with cultivated specimens of the same in this respect.

H. Marshalli Linton, var. *cremnanthes* F. J. Hanbury. Here we place a plant gathered as a peculiar form of *H. nigrescens* in 1889 at the Dhuloch, S. Aberdeen, which differed from *H. Marshalli* chiefly in the very dark style and leaf-serration. Cultivation of this has produced a very similar plant to var. *cremnanthes*.

H. chrysanthum var. *microcephalum* Backh. Rocks, Glen Lyon side of Ben Lawers range, *Mid-Perth.

H. sinuans F. J. Hanbury. We add three more stations for this species in Mid-Perth; Meall na-Saone, Glen Lochay; rocks near Lochan-na-Lairige, between Killin and Ben Lawers; and rocks on the Glen Lyon side of the Ben Lawers range.

H. centripetale F. J. Hanbury. Rather plentiful along the Mid-law Burn, above the Grey Mare's Tail; Carrifron; and Selcoth Burn, near Moffat, Dumfriesshire. It seemed to us a new and distinct species, and also to Mr. Hanbury, when he first saw our specimens. It maintains its characters well in cultivation.

H. submurorum Lindeb. Glen Doll, *Forfar; and rocky bed of the Allt Dubh Galair, Glen Lochay, *Mid-Perth. Among the

Boswell plants we found this species from "Breadalbane, Perth, 1851, gathered by Dr. Boswell." We consider a plant gathered by the Rev. H. E. Fox on Helvellyn, in August, 1890, and sent to the Bot. Exch. Club, to be this species. Mr. Hanbury has specimens of the same plant gathered by Mr. Fox on Dollywaggon Pike, Lake District.

H. clovense, n. sp. A handsome and uniformly distinct species, fairly abundant in the Clova district, at elevations between 500 ft. and about 2000 ft.; which would be associated with *H. Schmidtii* or *H. murorum*, if judged by its leaves alone, but has the involucre of the *nigrescens* section. It has been gathered in several spots in the Clova Valley, in Glen Doll, in Glen Fiagh, along the Unich Water, and on Craig Maskeldie; also by the Rev. E. S. Marshall on Craig Rennet formerly, and last year in Glen Canness, Forfar, and at Cairnwell, E. Perth; also previously in Glens Fiagh and Canness, Forfar, by Mr. F. J. Hanbury, for whom it was named by Mr. Backhouse on the one occasion *H. Schmidtii*, var., on the other, "*H. nigrescens*, not typical." We give as another locality the Midlaw Burn, near Moffat, Dumfriesshire, where we gathered several plants in 1890, which long remained as forms of *H. nigrescens*. Mr. Hanbury was able to show us several specimens that seemed to be identical, from another part of Scotland, which Lindeberg had named *H. nigrescens*, form. This plant of the Moffat district has unspotted leaves (unless some small weatherworn specimens from Craigmichen Scaur are the same species), but otherwise goes well under *H. clovense*. We place the species in a small group, with *H. centripetale*, *H. submurorum*, and *H. callistophyllum*, at the end of the *nigrescens* section, to which they are allied by their heads, though in some points their affinities are elsewhere. The following description is given by E. F. Linton, being partly drawn from fresh specimens gathered at Clova in 1890. The name, having been used in conversation from a time when the plant appeared peculiar to the Clova Mountains, Forfarshire, is preserved to avoid confusion.

H. clovense Linton. Stem 8–16 in. high, usually blotched with purple and subglabrous below, floccose above, more often leafless and not much branched, few-flowered. Leaves deltoid-ovate to ovate-acuminate, dentate, often with large spreading teeth near the base, the lowest sometimes reflexed, hairy on both surfaces and softly ciliate, but later leaves glabrescent above, much blotched with purple as a rule; stem-leaf when present lanceolate on short petiole, dentate or entire; heads $1\frac{1}{4}$–$1\frac{3}{4}$ in. diam., broadly ovoid, in a lax irregular corymb; the branches of a luxuriant plant spreading, few-flowered; peduncles floccose and glandular, not hairy, straight or curved; involucre dark green (usually drying nearly black), velvety with black simple and many glandular hairs; phyllaries broad below, attenuate, acute, moderately floccose near the base, porrect in bud; ligules yellow with a tinge of orange, glabrous at the tip; styles usually pure yellow, sometimes with a greenish tinge.

H. callistophyllum F. J. Hanbury. We have this from Glen

Doll, *Forfar, and the Midlaw Burn, Moffat, *Dumfriesshire; but in both localities the species appears to have been exceedingly scarce.

H. anglicum Fr., var. *longibracteatum* F. J. Hanbury. We have had this sent us by Mr. P. Ewing, collected in the lower part of Glen Lochay, near Killin; and have seen specimens from Ben Lui, collected by Mr. R. Kidston; both in *Mid-Perth. We gathered poor specimens on rocks by the railway, Strome Ferry, *W. Ross, in 1888, and by cultivation of a root eventually proved it to be this species.

H. anglicum Fr., var. *acutifolium* Backh. Glen Doll, Forfar.

H. cerinthiforme Backh. Coire Ardran, Mid-Perth, in small quantity. Collected at Tarbert, Harris, by Col. J. W. Rimington.

H. Langwellense F. J. Hanbury. A good series of plants from the Moffat district, *Dumfriesshire, chiefly from Black's Hope, but also from the Selcoth Burn, were after a while identified (with Mr. Hanbury's approval) with *H. Langwellense*, a species, we believe, only known certainly hitherto from the east coast of Caithness, and Sutherland; though plants of our own have been doubtingly suspected to have their place here, which grew near the Clunie at Braemar. Cultivation (in the garden at Shirley) has been of great service in this case, completely establishing the identity of the Moffat with the Caithness plant.

H. Lima var. *Brigantum* F. J. Hanbury. A single plant was found on the limestone cliff, Scout's Scar, near Kendal, *Westmorland. A short piece of cliff only was searched.

H. Schmidtii Tausch, var. *eustomon* Linton, n. var. This fine large-flowered plant has been noticed for some years on and about the ruins of Penard Castle, Glamorgan. The ruins are far away from any habitation, and the plant is more likely to have come from some of the numerous cliffs in the neighbourhood than any other source. It differs from *H. Schmidtii* in the more solid stem, in the more attenuate leaves, which are ovate-acuminate to ovate-lanceolate, rather fleshy, glabrous above, very glaucous, and in the larger lemon-yellow flowers, which are greater in diameter by ½ in. or so. The phyllaries are proportionately larger. Dr. Lindeberg, on seeing mature specimens, sent him by Mr. Hanbury, thought the plant referable to *H. vogesiacum* rather than *H. Schmidtii*. Later he named a very immature specimen (gathered in May!) "forma *H. Schmidtii*." The living plant is really a good deal off *H. Schmidtii*, in the direction of *H. Oreades* Fr., but the differences do not work out well on paper.

H. buylossoides Arvet-Touvet. Grassy banks about Uig, and the Vaternish Cliffs, Skye; woods south of Braemar, banks of R. Sluggan, and rocky banks by the Linn of Dee, S. Aberdeen; all these with the ligules erect, unopened, and of a greenish yellow colour; also Grey Mare's Tail, and Selcoth Burn, and Black's Hope, in the watershed of Moffat Water, *Dumfriesshire; in Glen Lyon and Glen Lochay, *Mid-Perth; by the R. Yarrow, *Selkirkshire, and collected by Mr. L. Watt in the Kilpatrick Hills, *Dumbartonshire, all with the ligules somewhat recurved, and partly but not perfectly opened. In reference to Mr. Hanbury's remarks on *H. onosmoides*

Fr. in this Journal (1892, 131, 132), we may observe that we at first made out the Braemar plant to be *H. onosmoides* Fr. ourselves; specimens of two of our gatherings so labelled were sent, by Mr. Hanbury's kindness, to Dr. Lindeberg, who affirmed one (from the R. Sluggan) to be *H. onosmoides* Fr., and affirmed the other (from the Linn of Dee) to be another species which he knew, but had not named. Later on we became acquainted with the description of Mons. Arvet-Touvet's plant, and sent specimens from Skye, Braemar and Moffat, enquiring whether they were not his *H. buglossoides*. We had M. Arvet-Touvet's distinct opinion in reply that our plants were his *buglossoides*, and not *H. onosmoides* Fr. As all our gatherings agree well with M. Arvet-Touvet's description, and do not fit equally well Fries' description or Lindeberg's specimens of *H. onosmoides*, we prefer to adopt M. Arvet-Touvet's name, and also to regard this widely dispersed plant of ours as a different species to *H. onosmoides* Fr. We detected among Mr. Hanbury's numerous doubtful plants a rather poor specimen of *H. buglossoides* from Minhiagh, Innishowen, N. Ireland, collected by Mr. H. C. Hart in July, 1891. We think that the Grey Mare's Tail plant which Mr. Backhouse thought to be *H. saxifragum*, and which Mr. Hanbury has shown us, is most probably this species. After two careful searches of the rocks so far as they are accessible in the neighbourhood of the Grey Mare's Tail, including an ascent of the rocky precipice just east of the fall, a climb which we do not advise anyone to undertake, and a thorough examination of the whole burn above the fall, we may say that we found no trace of any Hawkweeds at all like *H. saxifragum*, except this *H buglossoides*. Our specimens of this went to Dr. C. J. Lindeberg, queried as *H. saxifragum* Fr., and were negatived without any name being suggested. In connection with this question it may be observed that Mr. H. Dahlstedt has issued in his set of Hieracia (Fasc. iii. No. 26) a plant rather like our shadegrown specimens of *H. buglossoides* from the Yarrow, near Selkirk, which he names *H. saxifragum* Fr. var. *pseudonosmoides*, n. subsp. This is not at all identical with our series of Moffat plants, but it shows that there is resemblance between forms of the two species. A plant which reached us through the Botanical Exchange Club, collected by Mr. W. H. Beeby on the Bergs of Skelberry, Northmaven, Shetland, in July, 1889, and sent out as *H. Schmidtii* Tausch., is, we believe, referable rather to this widely distributed species; it scarcely differs from the Moffat form of the plant, except in the greater breadth of the leaves.

H. Oreades Fr. Rocks, Bettyhill, *W. Sutherland. Also from Craig Maskeldie, above Loch Lee, *Forfar, where it would appear to be very scarce.

H. argenteum Fr. A broad-leaved form from Little Craigindall, S. Aberdeen, and from Bettyhill, W. Sutherland; in the latter case a possible product of *H. Oreades* and this species. A very different broad-leaved form, a striking-looking plant, comes from rocks near Llyn Ogwen, Carnarvon; Mr. Hanbury has found a similar plant to this by the R. Elan, Radnor.

(To be continued.)

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 88.)

Physospermum commutatum Spreng. Spec. Umb. 22 (1818). **1713.** "Cornwal Saxifrage."—Pet. Herb. Brit. t. xxvi. fig. 9. Dillenius (Ray, Syn. iii. 209) identifies the figure with the plant, of which he gives a more accurate drawing: "accuratiorem quam Petiveri hujus figuram vid. Tab. viii." It must have been known as British much earlier than 1713, for Buddle, who died in 1715, has it in his herbarium "a D. Stephens e Cornubiâ missum" (Hb. Sloane, cxx. 37).

Conium maculatum L. Sp. Pl. 243 (1753). **1548.** "Oure Hemlocke."—Turn. Names, C ij, back.

Smyrnium Olusatrum L. Sp. Pl. 262 (1753). **1562.** "Our Alexander groweth . . . in Ilandes compassed about the se, as in a certayn Ilāde betwene the far parte of Sommerset shere & Wales." —Turn. ii. 68.

Bupleurum rotundifolium L. Sp. Pl. 236 (1753). **1568.** "In Somersetshire betwene Summerton and Marlock" (Martock). —Turn. iii. 56.

B. aristatum Bartl. in Bartl. & Wendl. Beitr. ii. 89 (1825). **1812.** Found in Devonshire by the Rev. Aaron Neck, and sent to Sowerby Jan. 19, 1802 (E. B. 2468), and note on original drawing for same.

B. tenuissimum L. Sp. Pl. 238 (1753). **1663.** "Near Ellesley [Eltisley] in the road from Cambridge to S. Neotes, also at Maldon in Essex," &c.—R. C. C. App. i. 3. This may be the 'Bupleurum minimum nondum descriptum floribus luteis' of How (Phyt. 18, 1650), "found in Surrey."

B. falcatum L. Sp. Pl. 237 (1753). **1834.** Found by Mr. Thomas Corder in 1831, "at Norton Heath, between Chelmsford and Ongar, Essex."—E. B. S. 2763.

Trinia vulgaris DC. Prod. iv. 103 (1830). **1570.** "Bristoiæ in Anglia, ad rupem Vincentii, nobis primum magna copia repertam." —Lob. Adv. 331.

Apium graveolens L. Sp. Pl. 264 (1753). **1548.** "Groweth in watery places and also in gardines."—Turn. Names, C viij. "Growes wilde abundantly upon the bankes in the salt marshes of Kent and Essex."—Ger. em. 1014.

A. nodiflorum Reichb. f. Ic. Fl. Germ. xxi. 10 (1867). **1632.** "Sium umbellatum repens."—Johns. Kent, 27. "Almost in every watery place about London."—Ger. em. 257.

A. inundatum Reichb. f. Ic. Fl. Germ. xxi. 9 (1867). **1641.** "Sium pusillum foliis variis nondum descriptum, in aquosis."—Johns. Merc. Bot. pars alt. 33. "In Surrey near Purbright."—Merrett, 114.

Cicuta virosa L. Sp. Pl. 255 (1753). **1633.** "Found by Mr.

Goodyer in the ponds about Moore Parke; and by M. George Bowles in the ditches about Ellesmere [Salop], and in divers ponds in Flint-shire."—Ger. em. 257.

Carum verticillatum Koch in Nov. Act. Nat. Cur. xii. 122 (1824). **1732.** Near Ayr, in Scotland. Mr. W. Houston.—Martyn's Tournefort, 154.

C. segetum Benth. & Hook. f. Gen. i. 892 (1867). **1629.** "Sium terrestre."—Johns. Kent, 8. First observed by John Goodyer, who says (Ger. em. 1018), "I took the description of this herb the yere 1620, but observed it long afore."

C. Bulbocastanum Koch in Nov. Act. Nat. Cur. xii. 121 (1824). **1841.** Found by Rev. W. H. Coleman in 1839, "near Cherry Hinton in Cambridgeshire."—E. B. Supp. 2862.

Sison Amomum L. Sp. Pl. 252 (1753). **1548.** "Besyde Shene" (Middx.).—Turn. Names, G. iij, back.

Sium latifolium L. Sp. Pl. 251 (1753). **1597.** "In moorish and marshie grounds."—Ger. 200. **1650.** "By Redding."—How, Phyt. 114 (1650).

S. erectum Huds. i. 103 (1762). **1633.** "This I first found in the company of M. Robert Larkin going betweene Redriffe and Deptford."—Johnson in Ger. em. 257.

Ægopodium Podagraria L. Sp. Pl. 265 (1753). **1597.** "Groweth of it selfe in gardens without setting or sowing."—Ger. 849.

Pimpinella Saxifraga L. Sp. Pl. 163 (1753). **1568.** "Groweth commonlye in Englande."—Turn. iii. 11.

P. major Huds. i. 110 (1762). **1660.** "In the woods about S. George Hatley, and many other woods on the borders of Cambridgeshire towards Bedfordshire."—R. C. C. 118.

Conopodium denudatum Koch in Nov. Acad. Nat. Cur. xii. 119 (1824). **1548.** "Groweth plentuouslye in Northumberland beside Morpeth."—Turn. Names, B i, back.

Myrrhis odorata Scop. Fl. Carn. ed. 2, i. 107 (1772). **1777.** "Frequent in the low lands [of Scotland], in orchards, and waste places, but always near houses."—Lightf. Fl. Scot. 166.

Chærophyllum temulum L. Sp. Pl. 258 (1753). **1633.** "Found in June and July almost in everie hedge."—Ger. em. 1037.

Scandix Pecten L. Sp. Pl. 256 (1753). **1562.** "Groweth in ye corne."—Turn. ii. 130.

Anthriscus vulgaris Pers. Syn. i. 320 (1805). **1632.** Hampstead Heath.—Johns. Enum. ("Myrrhis sylvestris nova Æquicolorum").

A. sylvestris Hoffm. Umb. 40 (1814). **1548.** "Myrrhis . . . called in Cambrygeshyre casshes . . . groweth in hedges in every countrey."—Turn. Names, E v, back.

Seseli Libanotis Koch in Nov. Act. Nat. Cur. xii. 111 (1824). **1690.** "On Gogmagog Hills in Cambridgeshire."—Ray, Syn. i. 70.

Fœniculum vulgare Mill. Dict. (1768). **1677.** "By the seaside in Cornwal towards the lands end plentifully," and "Pevensey Marsh in Sussex and elsewhere."—Ray, Cat. ed. 2, 111.

Crithmum maritimum L. Sp. Pl. 246 (1753). **1548.**

"Groweth much in rockes and cliffes beside Dover."—Turn. Names, C v, back.

Œnanthe fistulosa L. Sp. Pl. 254 (1753). **1597.** "Neere the river of Thames or Tems about the Bishop of Londons house at Fulham."—Ger. 902.

Œ. pimpinelloides L. Sp. Pl. 255 (1753). **1844.** "Dry meadow near Forthampton, Gloucestershire. Mr. Edwin Lees."—J. Ball in Ann. N. H. xiv. 4.

Œ. peucedanifolia Pollich, Hist. Pl. Palat. i. 289 (1776). **1794.** "Banks of the Isis beyond Ifley."—Sibth. Fl. Oxon, 98.

Œ. Lachenalii Gmel. Fl. Bad. i. 678 (1805). **1690.** "In fossis . . . in parochia Quaplod agri Lincolniensis non procul ab oppido Spalding."—Ray, Syn. i. 241.

Œ. crocata L. Sp. Pl. 254 (1753). **1548.** "Groweth muche by the Temmes syde about Shene."—Turn. Names, H iiij, back.

Œ. Phellandrium Lam. Fl. Fr. iii. 432 (1778). **1597.** "In most places of England: it groweth very plentifully in the ditches by a causey as you go from Redreffe to Detforde neere London."—Ger. 905.

Œ. fluviatilis Coleman in Ann. N. H. xiii. 188 (1844). **1724.** "In rivulo inter Woodstock et celebrem illum pontem Ducis Marlborugii juxta Blenheim."—Dill. in Ray, Syn. iii. 216. "In Hertfordshire, Rev. W. H. Coleman."—Bab. Man. ed. 1, 131 (1843).

Æthusa Cynapium L. Sp. Pl. 256 (1753). **1597.** "Among stones rubbish . . . almost everywhere."—Ger. 905.

Siler trilobum Crantz, Stirp. Austr. 186, fasc. iii. 62 (1767). **1871.** "Upon rough chalky rising ground near Cherry Hinton, Cambridgeshire, June, 1867."—J. C. Melvill in Journ. Bot. 1871, 211.

Silaus pratensis Bess. ap. Roem. et Schultes, Syst. vi. 36. **1568.** "In Englande there is a wilde kinde of Daucus with longe smal leaves which groweth commonlye in ranke medowes that our countremen call Saxifrage."—Turn. iii. 67.

Meum Athamanticum Jacq. Austr. iv. 2, 303 (1776). **1548.** "I never sawe thys herbe in Englande savynge once at saynte Oswarldes" [St. Oswald, in Lee, near Hexham].—Turn. Names, E v. "Groweth in the bisshoprik of Durram in wild mores called felles."—Turn. ii. 57 (1562).

Ligusticum scoticum L. Sp. Pl. 250 (1753). **1684.** "Imperatoriæ affinis umbellifera maritima Scotiæ."—Sibbald, Scotia, ii. 32. "On a certain sandy & stony hill six miles from Edinburgh towards Queensferry in Scotland."—Ray, Fascic. 13 (1688).

Selinum Carvifolia L. Sp. Pl. ed. 2, i. 350 (1762). **1881.** Found by Rev. William Fowler in July, 1880, near Broughton Woods, N. Lincolnshire.—Report of Bot. Rec. Club (1881), and Journ. Bot. 1882, pp. 93, 129.

Angelica sylvestris L. Sp. Pl. 251 (1753). **1568.** "Groweth here in the lowe woodes and by the water sydes."—Turn. iii. 6.

(To be continued.)

SHORT NOTES.

Hermaphrodite Hazels.—I have noticed in this neighbourhood (Stonyhurst, Blackburn), during the present spring, three cases of hazels bearing male catkins with some of their florets apparently bisexual. The phenomenon is most noticeable in the bud, when the long red styles protrude from between the closed-up scales. By the time the florets have opened, the style is withered, but may still be discerned as a black thread among the anthers. In each of the three plants a fairly large proportion of the male catkins, perhaps about a quarter, exhibited the abnormal growth; the number of style-bearing florets on a catkin varying from two or three to fifteen or more. The styles occurred mostly among the lower florets. I have seen the hazel quoted as an example of proterandry. In these parts the rule seems to be that as soon as a plant has matured its first pollen, it has also some mature stigmas to receive it; and that as long as mature stigmas remain, there remains also some pollen to fertilise them.—C. A. Newdigate.

[See *Journ. Bot*, 1889, 193, for note on another somewhat similar form. Specimens of both are in the British Museum Herbarium.—Ed. Journ. Bot.]

Lonicera Caprifolium in West Kent.—Two or three years ago I thought I found *Lonicera Caprifolium* growing in the neighbourhood of Halling, near Maidstone, but it was too early in the year to say for certain. Last week, however, I certified it. It is not, I suppose, native, but in this station it has every appearance of one, growing on the top of a steep chalky bank on the rough edge of a large thicket of hazel, &c., and far from habitations. In the neighbourhood *Helleborus fœtidus* and *Aquilegia vulgaris* grow in considerable quantity, both, I think, certainly native. The *Lonicera* may be bird-sown, but were it not for the great doubt which appears to exist as to its nativity in Britain, I should not for an instant have suspected this station.—A. H. Wolley Dod.

Flora of Kent.—From various causes, the publication of this work, projected a good many years ago, has been postponed. The available materials are now, however, nearly all incorporated, and we hope to see them in print at no distant date. Owing to the great advance made recently in the knowledge of critical forms, we need, and earnestly invite, the assistance of all botanists who may visit the county during the present season, in order that the information with regard to such forms may be as accurate and complete as possible. Our own occupations, and the fact of our being non-resident in the county, make this co-operation the more necessary and valuable. The Batrachian *Ranunculi*, *Rosa*, *Rubus*, *Potamogetons*, and *Chara* may be instanced as groups especially requiring further study. We shall be greatly obliged by the gift or loan of specimens, which should be complete and well-preserved, as indifferent material is useless. The Sevenoaks district may be expected to promise many brambles of interest; and the marshes of Sheppey and Thanet, as well as the wealden district between Cranbrook and Romney Marsh, should repay careful search. The

autumnal sea-side vegetation also requires further attention. Any information given will receive due acknowledgment, and may be sent to the Rev. E. S. Marshall, Milford Vicarage, Godalming. It is desirable to have definite localities for plants, not necessarily for precise publication, in the case of any which might be threatened with extinction by greedy collectors. — Frederick J. Hanbury; Edward S. Marshall.

Hieracium Friesii Htn. var. pilosum.—I suggest this as a name for the variety described by me under *H. Friesii* var. *hirsutum* (*Journ. Bot.* 1892, p. 369), and I regret that I overlooked the fact of the latter varietal name having already been employed by Hartmann for a different plant.—Frederick J. Hanbury.

NOTICES OF BOOKS.

Handbook of the Irideæ. By J. G. Baker. London: George Bell & Sons. 1892. 8vo, pp. xii. 247. Price 7s. 6d.

We are always glad of a handbook or monograph from Mr. Baker, and regret to learn from the opening words in the preface to the present one that "this is the last of a series"; we can only hope that its assiduous author will soon set to work on a similar undertaking. Since his arrival at Kew in 1866, Mr. Baker has been busy working up the Vascular Cryptogams and petaloid Monocotyledons: thanks to his papers in the Linnean Society's Journal, and his handbooks, collections of the latter group can be arranged with comparative ease, and the frequent damping off of "Floras" before the Monocotyledons are reached, though still a great drawback, is partly remedied. Before he lays down his lens and pen, will not Mr. Baker give us a monograph or handbook of the *Scitamineæ*, to supersede the somewhat incomplete and unwieldy revision of Horaninow?

The arrangement in tribes and genera adopted in the work before us is practically identical with that followed in Bentham and Hooker's *Genera Plantarum*. Tribe I., *Moræaæ*, contains the large genus *Iris*, with the nearly allied *Moræa* and eleven small genera characterised by their stalked, often fugitive flowers, and the position of the style-branches opposite the stamens and the outer segments of the perianth. In separating *Moræa* from *Iris* the author follows Bentham, and makes geographical distribution a factor, *Iris* being restricted to the north temperate zone and *Moræa* to the Cape and Tropical Africa, with one species in Australia. Slight differences from the *Genera Plantarum* are found in the separation of *Hydrotænia* from *Tigridia*, on account of its campanulate perianth, the substitution of Sweet's name *Herbertia* for Bentham's *Alophia*, the former claiming priority, while the small Cape genus, *Hexaglottis*, is no longer stigmatised as a "genus anomalum."

Tribe II., *Sisyrinchieæ*, differs from the first in having the style-branches alternating with the anthers. It is subdivided into four subtribes:—the *Croceæ*, with a bulb or corm, and one-flowered spathes;

the American *Cipureæ*, with a similar rootstock, but the perianth-tube obsolete, and usually more than one flower to the spathe; and the *Eusisyrinchieæ* and *Aristeæ*, which have neither bulb nor corm, the second being distinguished from the first by its distinct perianth-tube. The genus *Keitia*, queried by Bentham, which was founded by Regel on a species from Natal, is now identified with *Eleutherine plicata* Herb.

The third tribe, *Ixieæ*, with spicate, non-fugitive flowers solitary in each spathe, corresponds exactly with that of Bentham, and includes *Geissorhiza*, *Ixia* and their allies, with a regular perianth and simple style-branches, the *Watsonia* group with unilateral stamens and bifid style-branches, *Acidanthera*, *Tritonia*, &c., with a subregular perianth-limb, and the irregular *Gladiolus* group. It will thus be seen that Mr. Baker has abandoned the serial arrangement of his *Systema Iridæarum*, which preceded that of the *Genera Plantarum*. He then adopted three series—*Ixieæ*, *Irideæ*, and *Gladioleæ*, the first characterised by a regular perianth with similar inner and outer whorls and æquilateral stamens, including therefore *Ixia* and its near allies and the crocuses, and thus scarcely comparable with the present tribe of the same name.

Pax, who elaborated the *Iridaceæ* for Engler and Prantl's *Pflanzenfamilien* in 1887, has an arrangement very like that of Bentham; of his three sections, *Ixioideæ* corresponds exactly to *Ixieæ*, while the sub-tribe *Croceæ* is separated as a distinct section, *Crocoideæ;* the remainder of *Sisyrinchieæ*, and the *Moræeæ*, are united in a third, *Iridoideæ*.

In the present handbook the same plan is followed as in those dealing with the Fern Allies, *Amaryllideæ*, and *Bromeliaceæ*, the similarity extending to the convenient size and neat green binding of the three volumes. Unfortunately we may push the comparison a little further. Mr. Baker is a rapid worker, and gets over a great deal of ground, but he lacks a certain fineness of touch, so that a want of finish is occasionally evident. We remember to have made a similar observation when reviewing his *Handbook of Bromeliaceæ*. The species of *Marica* and *Sisyrinchium*, described by Martens and Galeotti (*Bull. Acad. Roy. Brux.* x.) from specimens collected by the latter in Mexico, are not included, though cited by Hemsley in the *Biologia Centrali-Americana*, where it is stated that the *Sisyrinchium* (*S. affine*) is referred to *iridifolium* (presumably by Mr. Baker himself) in the Kew Herbarium. There are some names of European species which we cannot find taken up, e. g., *Iris tristis* Rchb. (fig. 327 of his *Icon. Fl. Germ.*), which in the *Systema* occurs where we should expect to find it, among the varieties of *pumila*, although the other varieties are mentioned. Of course we do not look for citations of M. Gandoger's innumerable names—life is too short and space too valuable. Again, it would be well in cases where the name of a figure is corrected, especially in so well known and universally used book as the *Botanical Magazine*, to say exactly what the figure does represent. Thus we have on page 33, "*Iris aphylla* L. non *Bot. Mag.*," and on the next, "*I. lurida* Ait., *Bot. Mag.* t. 986, non 699"; but what then are these Bot. Mag. figures? There are a few mistakes in numbers in the references,

and *I. Watii*, a species dedicated to the collector, Dr. Watt, should have two ts; it is correctly written in the index.

Finally, it would have been more useful if more numbers had been quoted, especially in the case of the less-known species. We know, or have heard, that citation of numbers panders to laziness; but all the same, if one has not an authoritative specimen, it does considerably help out a description, especially if the latter is not very full or is provokingly like its neighbours.

A. B. Rendle.

The Characeæ of America. Part ii. Fascicle 1. By Dr. T. F. Allen. 8vo. New York. [1893] not dated. Price 1 dollar.

In the second part of this work Dr. Allen proposes to give descriptions and illustrations of all the American species. The present number includes a part of the Monarthrodactylous section of *Nitella*, eight species being described, of which four are new—*N. obtusa*, *N. montana*, *N. Blankinshipii*, and *N. missouriensis*, all closely allied to *N. opaca*. In adddition to eight lithographed plates with magnified representations of parts of the various species, Dr. Allen has introduced a new feature in the illustration of these plants by giving photographs of dried specimens of some of them reproduced by process-blocks. Some of the photographs convey a very good idea of the general appearance of the plants, but the others are taken from badly preserved specimens. It is to be regretted that the plates are not numbered so that they can be referred to, and that the letterpress is disfigured by a large number of printer's errors.

H. & J. Groves.

Set of British Rubi. Fasc. 2, Nos. 26–50. Prepared by the Revs. E. F. & W. R. Linton, R. P. Murray, and W. Moyle Rogers.

This second fasciculus includes several of the commonest and most widely-distributed British forms, which are well known to all students of the genus, such as *fissus*, *Lindleianus*, *rusticanus*, *amplificatus*, *Sprengelii*, *Radula*, *echinatus*, *Koehleri* var. *pallidus*, and *dumetorum* var. *ferox*. Amongst the more local and less-known types are *dumnoniensis* of Babington, *Mercicus* of Bagnall, *pyramidalis* of Kaltenbach, *cognatus* of N. E. Brown, *mutabilis* of Genevier, *Lejeunii* of Weihe & Nees, and *argentatus* and *devexiramus* of P. J. Mueller. British botanists will be very glad to have placed before them a specimen of the true *carpinifolius* of Weihe and Nees, for there is hardly any other of their names which we have used so diversely. The specimens are carefully selected and well-dried, and may be taken as a model of what is needed by those who collect for the exchange clubs. Along with this set is distributed to each subscriber a copy of the Synopsis by the Rev. W. Moyle Rogers which has appeared in instalments in this Journal. In this botanists will find summarised the large amount of work in the genus which has been done in Britain by the editors of the fasciculus and others since Focke's Synopsis of the European Rubi has found its way into the hands of our botanists. It would have added materially to the value of the Synopsis if more synonymy

had been given. It is often difficult or impossible to tell in what relation the names here used for the first time as applied to British forms stand in comparison with those employed by Babington in his Synopsis and in his supplementary papers in this Journal, and in the list in the last edition of the *London Catalogue*. For our commonest English hedge bramble the name *ulmifolius* Schott, which is used by Focke, has many years' priority over *rusticanus*; and *horridus* of C. F. Schultz, fully described in 1819 (*Fl. Starg. Suppl.* p. 30), has many years' priority over *dumetorum ferox*. The name *dumetorum* as used by Weihe & Nees is intended to cover *corylifolius*, as well as *our dumetorum*.

J. G. B.

The Structure of Wheat: shown in a series of Photo-micrographs, with explanatory remarks. By Robert H. Dunham. London: Wm. Dunham, Mark Lane. 1892. Pp. 26, and 21 photographs. 8vo.

There are some admirable and instructive photographs in this volume, though they are not all equally good. They are chiefly devoted to the flower and fruit, but two deal with the stem, and one of these is very good, showing the structures through the solid portion of a node. The details of the flower do not lend themselves to the production of satisfactory photo-micrographs, but the sections of the grain are valuable. The photographs of the gluten-containing cells (numbered 17 and 18), which form the outer series of the cells of the seed, are unhappily interpreted as being an inner skin of the grain. It must however be said that a careful investigation of the photographs will supply an accurate idea of the structure and parts of the grain of wheat.

It is to be regretted that Mr. Dunham, in issuing his original illustrations, did not obtain the help of some one acquainted with histological botany. He would have avoided some incorrect interpretations of the objects photographed, such as making the gluten-cells a skin, or treating the walls of the empty cells in his sections as "gluten webbing, spread out somewhat after the manner of a fishing-net, to which it has a distinct resemblance." "The endosperm," he says, "consists of gluten-walls and starch, and the gluten is arranged in a fine network, which extends to the centre of the berry, forming, with the starch, the inside of the wheat berry." The reader will meet with many novel notions in the book, such as, to give a single example:—"The hairs of the beard are hollow. These hollow hairs are, in effect, conduits, of which it is the function to draw off the superfluous moisture that would otherwise cause prejudicial fermentation. On the other hand, it is the proper function of this moisture to convey to the kernel its mineral and gaseous food. Another duty of the beard is connected with the earliest life of the plant, for when the seed is first sown, these hair ducts suck up the moisture necessary for the process of germination."

W. C.

ARTICLES IN JOURNALS.

Annals of Botany (March). — A. C. Seward, 'The Genus *Myeloxylon*' (2 plates). — D. H. Scott & G. Brebner, 'The Secondary Tissues in certain Monocotyledons' (3 plates). — B. G. Cormack, 'Cambial Development in *Equisetum*' (1 plate). — J. R. Green, 'Vegetable Ferments.' — E. Overton, 'Reduction of Chromosomes in Nuclei of Plants.'—P. Groom, 'The Velamen of Orchids.' — Id., 'Influence of external conditions on form of leaves.' — A. P. Swan, 'Resisting vitality of spores of Bacillus.'

Annals Scottish Nat. Hist. (April). — A. Bennett, 'Records of Scottish Plants for 1892.'—E. M. Holmes, 'Occurrence of *Pylaiella varia* in Scotland' (1 tab.). — J. Roy, 'Scottish Desmidieæ.'

Bot. Centralblatt. (No. 14).—H. Schenck, 'Ueber Einschliessen von grösseren Schmitten zur Herstellung von Demonstratiens-Präparaten.' — (Nos. 15–17). M. Britzelmayr, 'Materialen zur Beschreibung der Hymenomyceten.'

Botanical Magazine (Tokio: Feb.). — R. Yatabe, *Senecio Boninsimæ*, sp. n.

Bot. Notiser (häft. 2). — K. Bohlin, 'Suörlger från Pite Lappmark.' — N. E. Svedelius, 'Några iakttagelser angående fröna hos de svenska Juncus-arterna.'— G. A. Fröman, 'Om slingringen hos *Solanum Dulcamara*.'—O. Juel, 'Om några heteroeciska Uredineer.' —A. Pihl, 'Ofversigt af de svenska arterna af slägtet *Batrachium*.'

Bot. Zeitung (pts. 3 & 4: April 1).—G. de Lagerheim, '*Rhodochytrium*, nov. gen., eine Uebergansform von den Protococcaceen zu den Chytridiaceen.' — M. Büsgen, 'Ueber einige Eigenschaften der Keimlinge parasitischer Pilze.'

Bull. Soc. Bot. France (xxxix., Sess. extraord. en Algérie). — Rapports sur les excursions de la Société.

Bull. Torrey Bot. Club (March). — N. L. Britton, 'J. S. Newberry' (portrait). — J. H. Redfield, 'I. C. Martindale.' — E. L. Gregory, 'Anatomy as a special department of Botany.' — W. G. Farlow, 'Notes on Algæ.' — B. D. Halsted, 'Solanaceous Anthracnoses.'—J. D. Leiberg, *Ditrichum montanum*, *Grimmia pachyphylla*, spp. nn. (2 plates).— G. N. Best, *Buxbaumia Piperi*, *Ditrichum amblyum*, sp. nn. — J. Deby, 'Fossil Aulisci of California.' — T. F. Allen, 'New Characeæ' (*Nitella formosa*, *N. japonica*, spp. nn.).— N. L. Britton, *Hieracium Greenii*, sp. n. (1 plate).

Erythea (April). — E. L. Greene, 'Vegetation of summit of Mount Hamilton.' — Id., 'Novitates Occidentales.' — A. Davidson, 'Immigrant Plants of Los Angelos County.'

Gardeners' Chronicle (Mar. 25). — *Galanthus maximus* Baker (n. sp. or hybr. ?).—H. N. Ridley, '*Œceoclades maculata*.'—(Ap. 1). *Iris atrofusca* Baker, sp. n.—(Ap. 15), *Bletia Godseffiana* Kränzlin, *Oncidium Kranzlinii* O'Brien, spp. nn.

Irish Naturalist (April). — R. Ll. Praeger, 'Flora of County Armagh.' — W. Swanston, 'Silicified Wood of Lough Neagh.'— N. Colgan, 'Flora of Aran Islands.'

Journal de Botanique (April 1). — P. Hariot, 'Flore cryptogamique de l'île Jan Mayen.' — L. Mangin, 'Recherches sur les composées pectiques.'—E. G. Camus, 'Monographie des Orchidées de France' (contd.).—(April 16). L. Guignard, 'Sur le developpement de la graine' (contd.).—A. Franchet, *Gerbera Tanantii*, sp. n.

La Notarisia (Oct.–Dec. 1892). — W. West, 'Nonnullæ algæ aquæ dulcis Lusitanicæ.'—F. Del Torre, 'Alcune altre osservazioni sulle Alghe.'—D. Levi-Morenos, 'L'origine della Pietra litografica.' — E. De Wildeman, 'Sur la 'Cyanophilie' et l' 'Érythrophilie' des noyaux céllulaires.' — F. Castracane, 'Nuovo tipo di diatomea pelagica italiana.'

Nuovo Giorn. Bot. Italiano (Ap. 10). — S. Sommier, 'Risultati botanici di un viaggio all' Ob inferiore.' — N. C. Kindberg, 'Excursions bryologiques.' — E. Baroni, 'Osservazioni sul polline di alcune Papaveracee.'

Oesterr. Bot. Zeitschrift (March). — H. Zukal, '*Hymenobolus* (gen. nov. Perichænacearum) *parasiticus*' (1 plate).—R. v. Wettstein, 'Die Arten der Gattung *Euphrasia*.'—K. Fritsch, 'Nomenclatorische Bemerkungen.'—G. Evers, '*Hieracium Solilapidis* & *H. pulchrum*.' V. Schiffner, 'Bemerkungen über die Terminologie' (concl.). — F. Arnold, 'Lichenologische Fragmente.' — (April). A. Kerner, *Scabiosa Trenta* (1 plate). — V. Schiffner, *Metzgeriopsis pusilla* (1 plate). — H. Zukal, *Lachnobolus pygmæus*, sp. n. — P. Ascherson, *Veronica campestris* Schmalh.

BOOK-NOTES, NEWS, &c.

The death of Alphonse DeCandolle, which took place on the 4th of April, at Geneva, in his eighty-seventh year, removes from us the second, though happily not the last, botanical representative of a name which has for nearly a century occupied a prominent place in the scientific world. It would be impossible in the space just now at our command to offer anything like an adequate tribute to his memory; this will be offered in many other periodicals. But we hope in an early number to publish some notes regarding the deceased botanist which will be of interest to the readers of this Journal, of which he was always a friend, and which was not unfrequently honoured by being the medium of his botanical communications.

Death has indeed been busy lately among botanists. In addition to those in our last issue, we have to record the loss of Isaac C. Martindale, of New Jersey, of whom a biography appears in the Torrey *Bulletin* for March. Mr. Martindale was born July 15, 1842, at Byberry, Pennsylvania; the date of his death, which took place at Camden, New Jersey, is not given. He formed a large herbarium, and contributed several papers to American periodicals. The same number of the *Bulletin* contains a biography and bibliography, accompanied by an excellent portrait, of Prof. John Strong Newberry, who was born at Windsor, Connecticut, December 7, 1822, and died at Newhaven, Connecticut, on the same day, 1892.

Edward Parfitt, who died at Exeter on Jan. 15, was Librarian to the Devon and Exeter Institution—a post which he held for thirty-two years. A short notice of him occurs in *Natural Science* for April, from which we extract the following:—"Born near Norwich in 1820, the son of a gardener, he had from his earliest youth a passion for studying life of all kinds, which led him to go to sea in order to get some acquaintance with foreign animals. Wrecked near the Cape, he was obliged to make a long stay, which increased his taste for Botany and Entomology, and allowed him to make a collection. On his return to England he devoted himself to Horticulture, and went to Devon about 1846. Since then Parfitt worked on the Natural History of the county, published numerous local papers, and has left a MS. on Devon Fungi in 12 vols., illustrated by 1530 plates, drawn and painted by himself."

The deaths of two Italian botanists should also be mentioned: Adolfo Targioni-Tozzetti, who died at Florence on Feb. 13 in his seventieth year, and Guiseppe Antonio Pasquale, who was born at Anoja, Calabria, Oct. 30, 1820, and died at Naples on Feb. 14.

We are glad to see a ninth part of the useful *Manual of Orchidaceous Plants*, issued by Messrs. James Veitch & Sons. It includes *Cymbidium*, *Zygopetalum*, *Lycaste*, and a large number of smaller genera, with numerous illustrations and an index—the whole occupying 194 pages. The tenth and concluding part of this very useful work, previous instalments of which have been noticed at some length in this Journal, is announced as in preparation: it will contain a general review of the *Orchideæ*.

Prof. F. W. Oliver has communicated to the Royal Horticultural Society his second Report "on the Effects of Urban Fog upon Cultivated Plants." It forms a pamphlet of fifty-nine pages, and deals with "the precise nature of the injuries to plants caused by fog, and the participation in these results of the various conditions unfavourable to vegetation which are incident to fog." A third Report will deal with the fog question from its purely local aspect, all these Reports being preliminary to "a very detailed report or monograph" which will appear "in due time."

The first volume of an important addition to European floras—*Flore des Alpes Maritimes*, by M. Emile Burnat—has lately been published. In arrangement it follows the usual sequence of orders, the enumeration being carried down to the end of *Lineæ*. The critical notes, which are numerous, appear to be very carefully done, and the distribution of each species through the area occupied by the Flora (of which a map is given) is treated at length. We shall await with interest the completion of the work.

The long-delayed Kew Guides formed again the subject of a question in Parliament on Feb. 16. As on preceding occasions, it was stated that they were in course of preparation, and would be published as soon as possible. We trust that another summer will not be allowed to pass before the much needed *Guide to the Gardens* has been issued. Another answer stated that the price of the *Guide to the North Gallery* would be reduced to the original sum of fourpence. The *Kew Bulletin* has not appeared since January.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS Index, which has been published in the 'Journal of Botany' during the last four years, has elicited much more general interest than its compilers expected. It originated in the supposition that the want of such a reference-list to bygone workers in Botany, which we ourselves had often felt, might also be shared by others; and the very numerous expressions of interest and approval which we have received have shown that we were fully justified in our belief.

During its progress through the pages of the Journal, we have made numerous additions to the information given, and some corrections. The list of names has also been considerably extended, and has been brought down to the end of 1892. We have been encouraged to think that a reprint of the list, embodying these additions and corrections, would be convenient for those who find it somewhat difficult of consultation in its present form, and would also serve as a handy volume of reference for others specially interested in Botanical Biography.

The plan of the work, as readers of the 'Journal of Botany' will be aware, has been to be liberal in including all who have in any way contributed to the literature of the science, who have made scientific collections of plants, or who are known to have otherwise assisted in the progress of Botany, exclusive of pure Horticulture. Where known, the name is followed by the years of birth and death, and in other cases an approximate date is given. Then follows the place and day of birth and death, the place of burial, chief titles, dates of election to the Linnean and Royal Societies, or chief University degrees. In conclusion, reference is made to the chief sources of further information, in which Pulteney, Rees, Pritzel, Jackson, and the Royal Society's Catalogue are first quoted, and then the fullest known record, with a note of any portrait and of genera dedicated to the various persons catalogued, or, in the absence of genera, of species. Some estimate of the extent of the work may be gathered from the fact that in its serial form it comprised nearly 1700 names, and this number will be largely increased in the reprint.

The volume will be bound in cloth, and will be issued at 4*s.* (postage paid) per copy, *to subscribers whose names are received before publication*; the published price will be considerably higher. As only 500 copies will be printed, intending subscribers should send their names, with the amount of subscription, to Messrs. WEST, NEWMAN & Co., 54, Hatton Garden, London, E.C.

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BRITISH AND FOREIGN.

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New Zealand Algæ..

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ON SOME MARINE ALGÆ FROM NEW ZEALAND.

By R. J. Harvey Gibson, M.A., F.L.S.

(Plate 335.)

In the summer of 1892 I received from Prof. Jeffrey Parker, F.R.S., of Dunedin, the first instalment of a series of Marine Algæ which I had undertaken to examine and name for the Otago Museum. The Algæ were sent to me in a saturated solution of common salt, by which means the natural colour and form were preserved. There were in all fifty-one species represented in the collection, of which one is new to science. The material however, though largely consisting of well-known forms, afforded means of adding some new facts to our knowledge of several Phæophyceæ and Rhodophyceæ. The Algæ were collected at Cook's Straits, Warrington and Brighton, by Prof. Parker and Mr. A. Hamilton, Registrar of the Otago University. I have to record my indebtedness to the officials of the British Museum for granting me facilities for study in the Cryptogamic herbarium, and also to the algologists mentioned in this paper for aid and advice.

List of Species.

Cyanophyceæ.

Rivularia australis Harv.

Chlorophyceæ.

Codium tomentosum (Huds.) Stackh.
Caulerpa articulata Harv.
C. sedoides Ag.
Ulva lactuca (L.) Le Jol.
Enteromorpha compressa (L.) Grev.
Cladophora valonioides Sond. [named by Prof. Kjellman].

Phæophyceæ.

Cystophora torulosa J. Ag.
Hormosira Banksii Dcne. and var. *Sieberi* Harv.
Splachnidium rugosum Grev.
Carpomitra cabreræ Kütz. var. *Halyseris* Hook. et Harv.
Glossophora Harveyi J. Ag.
Anisocladus conjestus Rke.
Corynophlœa umbellata J. Ag.
C. cystophoræ J. Ag.
Adenocystis Lessonii Hook. et Harv.
Scytothammus australis Hook. et Harv.

Rhodophyceæ.

Rhodochorton Parkeri, n. sp.
Antithamnion Ptilota (Hook. et Harv.) Harv. Gibs.
Pleonosporium Brounianum (Harv.) Harv. Gibs.
Ptilota formosissima Mont.
Ceramium rubrum (Huds.) Ag.
C. apiculatum J. Ag.
Microcladia Coulteri Harv.
Nemalion ramulosum Harv.
Gigartina disticha Sond.
G. stiriata (Turn.) J. Ag.
G. radula (Esper.) J. Ag.
G. flabellata J. Ag.
G. angulata J. Ag. [named by Prof. Schmitz.]
Callophyllis Hombroniana Mont.
C. variegata Bory.
Ahnfeldtia torulosa Hook. et Harv.
Gymnogongrus furcellatus J. Ag.
Gracilaria dura J. Ag.
G. ramulosa J. Ag.
Polyzonia cuneifolia Mont., var. *bifida* Hook. et Harv.
Polysiphonia dendritica Ag.

RHODOPHYCEÆ.

P. Hystrix Hook. et Harv.
P. Mallardiæ Harv.
P. Gaudichaudii Ag.
P. cloiophylla Ag., var. *corymbosa* J. Ag.
Curdiæa laciniata Harv.
Hymenocladia lanceolata J. Ag.
Lenormandia spectabilis Sond., var. *angustifolia* Harv.

RHODOPHYCEÆ.

Pachymenia dichotoma J. Ag. [named by Prof. Schmitz.]
Dumontia filiformis (Lyngb.) Grev., var. ?
Corallina officinalis L.
C. Cuvieri Lamx. [named by Graf zu Solms-Laubach.
Jania micrarthrodia Lamx.
Melobesia amplexifrons Harv.

OBSERVATIONS ON CERTAIN SPECIES.

CAULERPA ARTICULATA Harv.; Harvey, in Hooker & Harvey's *Flora of New Zealand*, ii. p. 261.—This species has been found, I believe, only once previously, *viz.*, by Colenso, on the east coast of New Zealand. It is briefly described by Harvey (*l. c.*). Like that of Colenso, the present plant has no creeping rhizome. Histologically it is remarkable for the delicacy of its trabeculæ. The plant was kindly identified for me by Madame Weber van Bosse. I give a drawing of the plant, natural size, as no figure has, so far as I am aware, been published.

CARPOMITRA CABRERÆ Kütz. var. HALYSERIS Hook. et Harv.; Hooker & Harvey, *Lond. Journ. Bot.* iv. p. 528.—In the *Flora of N. Zealand* (vol. ii. p. 217), Hooker and Harvey consider *C. Halyseris* as merely "a broader and more distinctly midribbed form of *C. Cabreræ* Kütz." I have examined specimens of *C. Cabreræ* Kütz., collected by Lyall from Cook's Straits, New Zealand; and of *C. Halyseris*, collected by Sinclair at the Bay of Islands, and believe that Hooker and Harvey are perfectly justified in degrading the latter plant to the rank of a variety of the former. J. Agardh (*Spec. Alg.* i. p. 177) describes the fruit of the genus as "receptacula apice ramorum mitræformia"; Harvey (*Phyc. Brit.* xiv.), *apropos* of *C. Cabreræ*, and Hooker and Harvey (*New Zealand Fl.* ii. p. 217), *apropos* of the present variety, indicate the fruit as a conical body situated at the apex of a branch and surrounded by a thickened collar at its base, the sporangia and paraphyses being arranged in a zonate manner round the cone. More recently Johnson (*Ann. Bot.* v. 135) describes the mode of growth and the reproductive organs of *C. Cabreræ*, dredged by him in Plymouth Sound. Johnson believes that the thallus increases by trichothallic growth, and remarks that the apex of the branch is "occupied by a tuft of hairs." All the apices of the plants of *C. Cabreræ* var. *Halyseris* which I possess have this apical tuft, though the constituent hairs are not nearly so long as Dr. Johnson represents them. Johnson also describes the minute histology of the reproductive organs, but merely figures the entire receptacle, his figure being quite similar to those already published by Harvey and others. "The superficial cells of the thallus, instead of forming a compact limiting layer to the thallus," according to Johnson, "grow out into paraphyses and sporangia." The apex of the fructiferous

branch of var. *Halyseris* is always trifid, the central tooth being the oldest and having the two lateral teeth developed monopodially. The central tooth alone develops into a receptacle. The formation of sporangia and paraphyses commences by alteration and growth of the small-celled superficial layers immediately surrounding the apical tuft of hairs. From this point the development proceeds in a basipetal manner. The cortical layers at the same time increase considerably, so that the apex is distinctly swollen. The cortex curls backwards and outwards from the apex, forming an oblique collar with its edge turned inwards. The obliquity (which varies in degree in different branches) is owing to more rapid formation of sporangia and paraphyses on one side than on the other; the axis of the cone thus comes to be noncoincident with that of the branch.

Adenocystis Lessonii Hook. et Harv.; Kjellman, *Bihang Till k. Svenska Vet. Akad. Hand.* Bd. 15, iii.—The plants in the present collection are provided with the "gland-like spots" described by Harvey, which Kjellman describes as an epiphytic *Streblonema*.

Scytothamnus australis Hook. et Harv.—According to Hooker and Harvey the reproductive organs in this species occur singly among the peripheric filaments. The so-called spores are easily made out to be unilocular sporangia developed from the cells of the subepidermal layer, and lying between the cells of the superficial layer. In addition many of the branches have scattered over them spots, which in section show a dense tuft of elongated filaments arising in a depression of the cortex, and very similar to those described by Kjellman in *Adenocystis*. I have not in my possession sufficient material to enable me to determine accurately the nature of these structures.

Rhodochorton Parkeri, n. sp.—Filamentis ramosis, 3–5 mm. altitudine, apicibus acuminatis, binis vel ternis spinis aptis, secundatim positis; filamentis arctissimis per rhizoda subramis orientia. Sporangiis in intimo latere ramorum infimorum positis; tetrasporis cruciatim divisis.—Hab. N. Zealand, *Parker*!

Growing at the base of a cluster of molluscan (?) eggs there occurred this curious species, which at first sight recalled, save as regards its colour, the appearance of a minute *Sphacelaria*. On further examination the mode of branching and arrangement of sporangia seemed to locate the plant somewhere near, if not in, the genus *Rhodochorton*. The apices of the filaments being supplied with minute spines, and the stiff bristly character of the plant as a whole, made it apparent that if it belonged to that genus it must be a new species. I sent a specimen to Dr. Bornet, who was so kind as to favour me with his opinion in the following words:—"Je ne connais pas la curieuse petite Algue que vous me communiquez. Dans la preparation que vous m'avez envoyée je trouve un sporange dont le containe, fortmente contracté, semble indiquer une division cruciale des tetraspores et confirmier l'attribution generique que vous indiquez." Dr. Bornet suggested to me the advisability of further examination with the aid of reagents. This I did, and was able to confirm the previous observations on which my opinion as to the

generic position of the plant had been based. The plants, so far as my preparations show, grow in stiff bristly tufts, the individual plants being densely intertwined at their bases by rhizoidal filaments, which arise from the bases of the branches. The habit, indeed, is not unlike that of *Callithamnion polyrhizum* Harv., from Australia, but the microscopic appearances are totally different. The filaments are secundately branched, the branches being almost as long as the main stem. The angles of the branches with the main stem are very acute. Each branch is slightly curved outwards at its apex and tapers to a sharp point. Along the inner side of each branch there arise two or three sharp unicellular spines, which form the most characteristic and diagnostic feature of the species. The chromatophores are of the usual *Rhodochorton* type, and the cells are about three times as long as broad. The sporangia arise in clusters secundately on the inner sides of the branches near their point of origin. The basal cell of the common pedicel is considerably broader than the rest. The tetraspores are cruciate, and innovation of sporangia within the old and empty sporangia is frequent. The specimens were collected by Prof. Parker, F.R.S., at Brighton, ten miles south of Dunedin.

Antithamnion Ptilota Harv. Gibs. *Callithamnion Ptilota* Hooker and Harvey, *Lond. Journ. Bot.* iv. p. 272.—This rare and distinct species occurs in the present collection as an epiphyte. The closely-packed subulate simple pinnulæ, arising in pairs from every joint, compel me to place it in the genus *Antithamnion*. The plants bear tetraspores secundately arranged on the inner side of the bases of the ultimate pinnules.

Plenosporium Brounianum Harv. Gibs.; *Callithamnion Brounianum* Harvey, *Trans. Roy. Ir. Acad.* xxii. p. 561.—Two specimens of this species have been sent me, one with sexual, the other with asexual fruit. On comparison with the specimens in the herbarium of the British Museum, I found that the characters of these as well as of my own were distinctly those of a *Pleonosporium*. Harvey does not say that he had seen cystocarps, and the spores are merely described as "tetrasporis brevissime solitariis v. geminis ad latera pinnularum enatis." Several specimens are preserved in the British Museum herbarium, some sterile, two with asexual fruit, and one with cystocarpia. The sporangia contain eight, sixteen, or thirty-two spores, always, when mature, more than four; hence the characters are quite those of the genus *Pleonosporium* Näg., and not those of a true *Callithamnion*. Further, the cystocarpia, both in the specimens from Port Phillip and in those sent me from New Zealand, are binate, terminal, and involucrate, another character of *Pleonosporium*. *P. Brounianum*, however, as Harvey describes it, differs from other members of the genus in that the primary axis is falsely corticated with downwardly directed branches, giving the whole plant a spongy character.

Ptilota formosissima Mont.—Several very fine specimens, plentifully tetrasporic, occur in the present collection. According to Sonder (*Linnæa*, 1853, p. 514), this species is only a variety of *P. coralloidea* J. Ag. Agardh himself (*Epic.* p. 79) remarks, "Nec

judice sunt species bene distinctæ." A comparison of the tetrasporic condition of the two plants would, it seems to me, be sufficient in itself to refute Sonder's opinion, quite irrespective of the histological differences in the thallus. *P. plumosa* is very much closer in structure to *P. formosissima* than *P. coralloidea*.

Ceramium apiculatum J. Ag.—This species occurred as an epiphyte on *Codium tomentosum*, and was kindly identified for me by Prof. Schmitz. I have compared it with the specimens in the herbarium of the British Museum (named by Agardh) and found it to agree in all respects. In his *Epicrisis* (p. 105) Agardh indicates that the cystocarpia had not been seen by him. My plants, as well as those in the British Museum herbarium, are plentifully provided with both tetraspores and cystocarpia, the latter being of the usual type found in the genus.

Microcladia Coulteri Harv.; Harvey, *Ner. Bor. Amer.* p. 209.—This American species has not, so far as I am aware, been recorded hitherto from Australian seas. The plants bore tetraspores, cystocarps, and antheridia. The antheridia, of which I can find no description, are modified from the terminal branchlets, the pollinoids being formed by repeated division of the outer cortical cell-layer. I fail to see any evidence of Agardh's statement (*Epic.* p. 110), "Sphærosporæ mihi cruciatim divisæ obvenerunt."

Nemalion ramulosum Harv.; Harvey in Hook. & Harv. *Flora of N. Zeal.* ii. p. 245.—By Agardh (*Epic.* p. 508) this species is mentioned under "Species inquirendæ." Prof. Parker's collection includes a *Nemalion*, which is undoubtedly *N. ramulosum* of Harvey, agreeing in all respects save that the plant is rather smaller. Harvey's plant was not in fruit. That which I possess has very numerous cystocarpia lying among the dichotomous peripheric filaments and quite typical for the genus.

Polyzonia cuneifolia Mont. var. bifida Hook. et Harv.; Harvey in Hook. & Harv. *Fl. N. Zeal.* ii. — Several plants of this variety were obtained chiefly as epiphytes on *Gigartina Radula*. The species was first discovered by D'Urville at the Auckland Islands, and a diagnosis given by Montagne (*Prod. Phyc. & V. P. S.* p. 143). In his *Syll. Pl. Crypt.* also he gives a synopsis. In the *Flora of New Zealand*, Hooker and Harvey describe the present variety, giving as its diagnostic characters "foliis sæpissime profunde bifidis vel bipartitis, stichidiis ample cristatis." Kützing gives a figure of the species (*Tab. Phyc.* 15, vi). The plants collected by Mr. Hamilton were plentifully supplied with tetraspores and antheridia. The stichidia do not, as in the type form, become "pinnately composed," but are throughout simple or occasionally double. The attachment discs on *P. cuneifolia* var. *bifida* are, so far as one can judge by an examination of herbarium specimens of the type, much more numerous in that variety. The foliar appendages are alternately arranged on every second articulation, the intermediate articulation being occupied by a branch or an attachment disc. More rarely an attachment disc and a branch arise from the same articulation. Each disc is provided with a short stalk composed of two elongated cells, which are prolongations of two of the

cortical cells of the thallus. Each of these at its free end branches at right angles to its axis into four simple or bifid projections, from which are subsequently given off V-shaped cells, again often bifid at their ends. In this manner a flat plate is formed. There appears to be no organic connection between the epiphyte and the host. Stichidia occur on the under side of the branches, near the apices, and for some distance backwards. Each is as thick as an ordinary branch and simple, or double by formation of a secondary lobe near the base of the primary stichidium. The stichidium is bluntly pointed or breaks up at its apex into several short spines. A few multicellular spines are also given off along the course of the stichidium, which occasionally become leaflike. The tetraspores are developed seriatim in the stichidium, the sporangia being formed by transformation of the central cells of the branch, and not as in the allied genus *Polysiphonia*, from buds of a cell intermediate between the cortical and central cells. One or two specimens found creeping over *Gigartina Radula* bore antheridia, and as these organs seem not to be well known in the genus, and not at all in *P. cuneifolia*, I add a brief description. Each antheridium is modified from the ventral half of the bifid foliar appendage, and is covered by the upper half in dorsal view. The antheridium is roughly flask-shaped in *outline*, though it is in reality merely a flat plate composed of two layers of pollinoids bordered by a single row of large cells, and having a single median strand of elongated cells running up the centre of the plate from which the rows of pollinoids appear to stretch in radial lines to the margin. The antheridium ends in a narrow projection, which is split up at the apex into three or more teeth. The whole antheridium appears to drop off, for behind the last antheridium on a given branch each foliar appendage is single, but has the stump of the antheridium still prominent.

Polysiphonia dendritica Ag.; Harvey, *Ner. Austr.* p. 47.—This very beautiful little species, about the synonymy of which there appears to be some doubts in the minds of authors, occurs in the present collection as an epiphyte on *Gigartina stiriata* and *G. radula*. In describing the species, Harvey (*l. c.*) states that the stem is triply pinnate, "pinnæ alternating with subulate ramuli elongate patent, bipinnate; the pinnules in like manner alternate with subramuli." He adds, "I am not certain whether this be the plant of Agardh, whose specimens came from Brazil, and I have also feared to quote Montagne's *Orb. Voy. Patag.* p. 6, tab. 4, whose figure, taken from the Patagonian specimens, differs from my plant in some respects." Previously, in the *Lond. Journ. Bot.* (1845), Hooker and Harvey describe the species, and refer to Agardh's description of the Brazilian form (*Syst. Alg.* p. 104), *viz.*:—"Inordinate ramosa, pinnis simplicibus compositisque intermixtis." These authors add, — "We consider this apparent, not real, irregularity of the branching to have arisen from the frond at first being margined with subulate teeth which never change their form and size, but from whose axils spring secondary branches fringed like the primary with subulate ramuli, and that again in the axils

of these ramuli tertiary branches are formed, and so on." The plants which I possess are as undoubtedly identical with those described by Hooker and Harvey, as they are not with those of Montagne. On the other hand, the *P. dendritica* figured by Kützing is obviously that of Montagne. I cannot follow Hooker and Harvey's criticism of Agardh's description as quoted above. Certainly the general appearance recalls axillary branching, but the "bract" does not precede the "axillary branch" in development. The frond seems to me to be simply pinnate with subulate ramuli at first, and afterwards every second ramulus, alternating on either side, develops secondary pinnules. In almost all the specimens this alternate compound branching is quite regular; but in one or two, intermediate stages occur where the ramuli are alternately smooth and wavy; and lastly, in others all are quite smooth.

Dumontia filiformis (Lyngb.) Grev., var.? I have experienced some difficulty in naming this plant. Prof. Schmitz, to whom I sent a specimen, gave it as his opinion that it was near *Nemastoma*. I confess I do not share that view. I thought at first that it was not unlike *Meristotheca tasmanica* J. Ag., but as it did not agree in detail with that form, I was compelled to seek for another relationship. Save for the very irregular branching, I should have believed it to be near *Dumontia*, with which it agrees in histological characters. I then sent a specimen to Kew, and the Director informs me that it is almost certainly *Dumontia filiformis* Grev., in which view I feel inclined to agree, although it is doubtless a distinct variety of that species. The plant has only tetraspores, so that in absence of cystocarpic fruit I am compelled to record it with a query.

Explanation of Plate 335.—Fig. 1. *Caulerpa articulata* Harv., nat. size. 2—4. *Carpomitra Cabreræ* Kütz., var. *Halyseris* Hook. et Harv. 2. Apex of sporangiferous branch, showing central and one of the side teeth with apical tuft of hairs × 20. 3. Long. vert. sect. of sporangiferous tooth, showing mode of origin of sporangial layer × 20. 4. Mature receptacle in long. vert. sect. × 20. 5. *Rhodochorton Parkeri*, n. sp., nat. size. 6. Filaments of the same, with sporangia × 20. 7. Sporangia of the same × 200. 8. Stichidium of *Polyzonia cuneifolia* var. *bifida* × 200. 9. Antheridium of same × 200.

THE DISINTEGRATION OF *LYCHNIS*.

By Frederic N. Williams, F.L.S.

In the delimitation of genera and transference of groups of species, which have taken place from time to time in the order *Caryophyllaceæ*, no genus has probably received such rough handling and mutilation, more particularly at the hands of critical systematists in continental floras, as the genus *Lychnis*. Even in an attenuated Linnean sense it is not so much as admitted into some of the German floras: while the compilers of various English floras, rather than introduce strange names into their lists of genera, have indefensibly enriched *Silene* at its expense. In discussing the

affinities of *Silene* and *Lychnis*, more especially in connection with the disintegration of the latter genus, the selection of such species as may serve for generic types will be facilitated by associating with them the Linnean genus *Agrostemma*.*

The only absolute difference between *Silene* and *Lychnis*, as defined by Linnæus, was that the former had three styles, and the latter five; and *Agrostemma* is only distinguished from *Lychnis* in having the lamina of the petal undivided. However, as the species of these three genera came to be more carefully studied, it was soon apparent that they should either be fused in one genus and broken up into natural sections, or that new genera should be formed out of them, in which the number of the styles should be considered as a character of very secondary importance, and in which the general structure of the ovary and capsule should determine the grouping of the species. For convenience, we will first consider them as one hypothetical pro-genus.

A unilocular capsule, occasionally plurilocular at the base, is characteristic of the order; and this character has been selected for grouping the species into two primary subdivisions,—those in which the capsule is truly unilocular, and those in which the capsule has remains of dissepiments at the base. The latter will include most of the species of *Silene*, and exclude such species as *S. noctiflora* and *virginica* Linn., for which (with some species of *Lychnis*) the genus *Melandryum* was founded by Röhling in 1796. The former will include *Lychnis*, in a very limited sense, and *Agrostemma*, and also the Linnean genus *Coronaria*, which was proposed in the first and second editions of *Genera Plantarum*,† but fused with *Agrostemma* in *Species Plantarum*. In following up the secondary subdivisions of these two main groups, we will discuss first the affinities of the *Lychnis* group, and then the affinities of the *Silene* group.

In *Agrostemma Githago*‡ the carpels are alternate with the teeth of the calyx, in *Lychnis chalcedonica* they are opposite to them; this is a more natural distinguishing character between the two genera than the segmentation of the petal. Moreover, in the former species, there is an indication of segmentation in the emarginate petals. In *L. chalcedonica* again, which may be considered a typical species of the genus, the dehiscent capsule is 5-dentate (isomerous with the styles); in Röhling's genus *Melandryum*, which includes *L. dioica* Linn. and *L. diclinis* Lag., as well as those species of *Silene* in which the capsule is unilocular, the teeth of the dehiscent capsule are twice as many as the styles (dimerous).

The genus *Heliosperma*,§ which branches off, as it were, from

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* *Systema Naturæ* (1735), ed. 2 (1740), ed. 6 (1748), p. 107; *Genera Plantarum* (1737), n. 379, ed. 2 (1742), n. 449, ed. 5 (1754), n. 516.

† Ed. 1, p. 135, n. 380; ed. 2, p. 200, n. 450.

‡ Cosson regards this as a quasi-cultivated form, of which the type is the Anatolian *A. gracile* Boiss. There are no other species known.

§ Reichb. *Repert. Herb.* p. 206.

Melandryum (both having common characters which separate them from *Lychnis* proper), was founded by Reichenbach in 1841 on *Silene quadrifida* Linn., to include those species of *Silene* in which the capsule is unilocular and dehisces by twice as many teeth as there are styles, and in which the seeds are crested on the dorsal surface. A. Braun further circumscribed the limits of *Lychnis* by including in his genus *Petrocoptis** two Pyrenean species, *L. nummularia* Lapeyr. and *Silenopsis Lagascæ* Willk., which have imbricated petals, and seeds bearded at the hilum. With the view of still further restricting the significance of *Lychnis*, he also† proposed to revive the Linnean genus *Coronaria*, which, as far as the European species of *Lychnis* are concerned, would include *L. Coronaria* Lam. (*Agrostemma Coronaria* Linn.), *L. Flos-cuculi* and *L. Flos-Jovis* (*Agrostemma Flos-Jovis* Linn.), *L. Cyrilli* Richter, and *L. sibirica*. So that this would leave the genus *Lychnis* represented in Europe solely by *L. chalcedonica* of Russia. *Coronaria glabra*, &c., of *Hort. Upsal.* p. 115, having capsules plurilocular at the base, is to be referred to the *Silene* group, and is the species on which Reichenbach founded his genus *Eudianthe*. In *Lychnis alpina* the commissural nerves of the calyx are wanting, and as this is a primary character in A. Braun's tribe of *Lychnideæ*, Schott‡ considered that this species should be the type of a new genus which he called *Liponeurum;* it certainly should be excluded from the *Lychnis* group, and seems to have affinities with *Saponaria*.

The genus *Coronaria*, which it is proposed to revive, is thus defined by Linnæus:—"*Calyx*. Perianthium monophyllum, clavæforme, striatum, erectum, coriaceum, 5-angulare, 5-dentatum, persistens: angulis minoribus interjectis. *Corolla*. Petala 5: ungues longit. calycis, margine aucti: limbus planus, speciosus: bracteæ cordatæ: nectarium componitur ex 2 denticulis in singuli petali collo enatis. *Stamina*. Filamenta 10, longit. tubi corollæ, alterna seriora, singulo ungui petalorum singulum insidens; antheræ incumbentes. *Pistillum*. Germen subcylindraceum. Styli 5, distantes, erecti, longit. staminum. Stigmata simplicia. *Pericarpium*. Capsula cylindracea, unilocularis, apice dehiscens. *Semina* plurima, subrotunda." This genus has been taken up by Garcke in the successive editions of *Deutschlands Flora*, who uses it in very much the same sense as A. Braun. Engler and Prantl§ divide *Lychnis* into two subgenera, *Eu-lychnis* and *Coronaria*. If we consider each of these as a genus, *Lychnis* in this very limited sense will almost exactly correspond with the *Hedone*‖ of Loureiro, who recorded *L. coronata* under the name of *Hedone sinensis*.

We come now to the *Silene* group, including the species in which the capsule is plurilocular at the base. The species referable to this group can be divided into two sections,—(1) those in which

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* *Flora*, 1843, p. 370.

† *Flora*, 1843, p. 368.

‡ *Analecta Bot.* i. (1854), p. 55.

§ *Die Natürlichen Pflanzenfamilien*, Theil iii. (1889), p. 73.

‖ *Fl. Cochinch.* p. 351.

the capsule dehisces by twice as many teeth as there are styles, and which include *Silene* Linn. (sensû limitato) and some species of *Lychnis* with plurilocular capsules, for which Reichenbach proposed the genus *Eudianthe;* and (2) those species in which the capsular teeth are isomerous with the styles, and which comprise the genus *Viscaria* of Röhling.† If species which have five styles are excluded from *Silene*, it would be better perhaps to include *Polyschemone nivalis* Schott (*Lychnis nivalis* Kit.) in *Eudianthe*, though Rohrbach in his excellent and incomparable monograph has preferred to retain this species as well as *Agrostemma Cœli-rosa*‡ in *Silene*. As long ago as 1825, Robert Sweet, in discussing the affinities of the plant now known as *Heliosperma alpestre*, remarked that the genus *Silene* was very much overgrown, and threw out the suggestion that "those (species) with an inflated calyx will probably form another natural genus." Though the disintegration of such genera as *Silene* has not proceeded on the lines indicated by this distinguished horticulturist, and though superficial and obvious characters such as the structure of the floral envelope have not been considered of generic importance, a study of essential characters in definite groups of species only emphasizes still more what Fries said, that it is a "genus vastissimum undique ad reliqua radios emittens."§

A tabular conspectus of the genera here mentioned will best illustrate their differential diagnosis :—

A. Capsule unilocular.
  a. Carpels alternate with the teeth of the calyx. Anthophore none. Styles 5. Capsule 5-dentate . . . . . AGROSTEMMA.
  b. Carpels opposite the teeth of the calyx. Anthophore conspicuous, often elongated.
    α. Capsule dehiscing by teeth equal in number to the styles.
      * Petals convolute in præfloration. Appendices fornicate at the base . . . LYCHNIS.
      ** Petals convolute in præfloration. Appendices efornicate at the base . . CORONARIA.
      *** Petals imbricate in præfloration. Seeds bearded at the hilum . . . . PETROCOPTIS.
    β. Capsule dehiscing by twice as many teeth as the styles.
      * Seeds crested on the dorsal surface. Styles 3 . . . . . HELIOSPERMA.
      ** Seeds not crested on the dorsal surface. Styles 5, rarely 3 . . . . MELANDRYUM.
B. Capsule plurilocular at the base.
  a. Capsule dehiscing by teeth equal in number to the styles . . . . . VISCARIA.

† *Deutsche Fl.* ed. 1 (1796), ii. p. 37.
‡ Linn. *Sp. Plantarum* (ed. 1), p. 436.
§ *Flora*, 1843, i. p. 123.

b. Capsule dehiscing by twice as many teeth as the styles.

α. Styles 5 . . . . . EUDIANTHE.
β. Styles 3 . . . . . SILENE.

If this redistribution of species be accepted, it will be interesting to note the changes of nomenclature that would be required in the British species of *Lychnis*. In the last edition of the *London Catalogue* six species are referred to this genus. The alternative names are placed in a parallel column :—

Lychnis alba† Mill.	=	*Melandryum pratense* Röhl. (1796).
Lychnis diurna Sibth.	=	*Melandryum silvestre* Röhl. (1796).
Lychnis Flos-cuculi Linn.	=	*Coronaria Flos-cuculi* A. Br. (1843).
Lychnis Viscaria Linn.	=	*Viscaria vulgaris* Röhl. (1796).
Lychnis alpina Linn.	=	*Liponeurum alpinum* Schott (1854). *Saponaria ? alpina*.
Lychnis Githago Lam.	=	*Agrostemma Githago* Linn. (1753).

The genus *Melandryum* also claims another British species, *Silene noctiflora*.

A PROVISIONAL LIST OF THE MARINE ALGÆ OF THE CAPE OF GOOD HOPE.

By ETHEL S. BARTON.

(Continued from p. 144.)

CHÆTANGIACEÆ.

ZANARDINIA MARGINATA J. Ag. Cape Agulhas, *Hohenack.*! No. 208. Algoa Bay, *Bowerbank*! Port Alfred, *Carr*! Kei Mouth, *Flanagan*! Port Natal, *Krauss*! *Gueinzius*! No. 4077.

Geogr. Distr. Warm Atlantic. Indian Ocean. Australia.

CHÆTANGIUM SACCATUM J. Ag. Sea Point, Kalk Bay, *Boodle*! Cape, *Harvey*!

C. ORNATUM J. Ag. Seal Island, *Challenger*! From Table Bay to Port Natal, *Areschoug*. Simon's Bay, *Challenger*! Cape Point, Kalk Bay, *Boodle*! *E. Young*! Cape Agulhas, *Hohenack.*! No. 343. Cape, *Ecklon*, *Drege*! *Areschoug*, Phyc. extraeurop. exsicc. No. 19; *Hb. Lenormand*! *Harvey*! *Reliq. Breb.*! No. 137; *Reeve*!

C. ZEYHERI Kütz. Cape, *Hb. Hering, fide Kützing.*

GELIDIEÆ.

PTILOPHORA SPISSA J. Ag. Cape, *Drege*.

P. PINNATIFIDA J. Ag. (= CARPOBLEPHARIS PINNATIFOLIA J. Ag.). Algoa Bay, *Ecklon*.

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† An inappropriate name: other species have white flowers and in this species the flowers are sometimes pale red.

GELIDIUM SERRATUM Kütz. (? = G. SERRULATUM J. Ag.). Cape, *fide Kützing*.

? G. RIGIDUM J. Ag. Cape, *Hb. Mus. Brit.* ! This specimen is too fragmentary to identify with accuracy.

Geogr. Distr. Throughout warm seas.

G. CARTILAGINEUM J. Ag. Robben Island, *Boodle* ! Table Bay, *Wenek* ! Cape Point, *Boodle* ! Kalk Bay, *E. Young* ! Camps Bay, *Reynolds* ! Cape Agulhas, *Hohenack.* ! No. 283. Knysna, *Krauss*, *Boodle* ! Kei Mouth, *Flanagan* ! Cape, *Campbel* ! in Hb. Sloan. 290; *Seba*, *Ecklon*, *Hb. Pulteney* ! *Parreyss* ! *Thunberg* ! *Hort. Cliff.* ! *R. Trimen* ! *Hb. Shuttleworth* ! *Hb. Roem.* ! *Hb. Grunow* ! *Scott Elliot* !

Var. SETACEUM Ag. Plettenberg Bay, *Home* ! Cape, *Hohenack.* ! No. 558, sub nomine *Gelidium asperum* Grev. ? No. 560, sub nomine *Gelidium rigidum* Mont.

Geogr. Distr. Indian and Pacific Oceans. W. Indies.

G. AUSTRALE J. Ag. = G. ASPERUM Harv. Camps Bay, *Tyson* ! Algoa Bay, *Harvey* !

Geogr. Distr. Australia.

G. ASPERUM Grev. Natal, *Krauss*.

Geogr. Distr. Australia.

G. CORNEUM Ag. Sea Point, *Harvey* ! Mossel Bay, *Hb. Shuttleworth* ! Algoa Bay, *Ecklon*, *Bowerbank* ! Port Alfred, *Carr* ! Natal, *Gueinzius* ! Cape, *Drege* ! *Krauss* ! *Parreyss* ! *Hb. Dickie* !

Geogr. Distr. Throughout all oceans.

SYRINGOCOLAX MACROBLEPHARIS Reinsch. On *Gelidium cartilagineum* J. Ag., *Thunberg* !

SUHRIA PRISTOIDES J. Ag. Table Bay, *Ecklon*. Cape Point, *Boodle* ! Kalk Bay, *Boodle*, *E. Young* ! Knysna, *Boodle* ! Cape Recife, *Bowerbank* ! Algoa Bay, *Ecklon*, *Hb. Dickie* ! Port Alfred, *Carr* ! Natal, *Krauss*. Cape, *Robertson*, *Menzies* ! *Thunberg* ! *Krauss* ! *Hb. Lenormand* ! *Harvey* !

S. REPTANS Grun. Cape, *Frauenfeld*; on *Haliotys* and *Patella*. Grunow thinks this may possibly be a dwarf form of *S. pristoides* J. Ag.

S. VITTATA J. Ag. Robben Island, *Wenek* ! *Boodle* ! Table Bay, *Ecklon*, *Krauss*. Muyseuberg, *Harvey* ! Cape Point, Sea Point, *Boodle* ! Gordon's Bay, *Ecklon*. Kalk Bay, *E. Young* ! Camps Bay, *Reynolds* ! False Bay, *Jänisch* ! Cape Agulhas, *Hohenack.* ! No. 226; *Reliq. Drebissonianæ*, Nos. 109, 184. Cape, *Hb. Linnæus* ! *Drege* ! *Parreyss* ! *Gaudichaud*, *D'Urville*, *Hb. Grunow* ! *Wallroth* !

Geogr. Distr. Moluccas. Shores of South America. New South Wales.

PTEROCLADIA LUCIDA J. Ag. Algoa Bay, *Ecklon*.

Geogr. Distr. Australia. New Zealand.

HYPNEACEÆ.

HYPNEA ECKLONI Suhr. Port Alfred, *Slavin* !

H. MUSCIFORMIS J. Ag. Cape Agulhas, *Hohenack* ! No. 890.

Knysna, *Krauss*, *Boodle*! Algoa Bay, *Ecklon*. Natal, *Gueinzius*; Cape, *Hb. Dickie*!

Geogr. Distr. Warm Atlantic. W. Indies. Indian and Southern Oceans.

H. EPISCOPALIS Hook. et Harv. Cape, *Hb. Dickie*!

Geogr. Distr. Australia. Tasmania.

H. CERAMIOIDES Kütz. Cape, *Harvey*! *Pappe*! *Hb. Kew*!

H. SPINELLA J. Ag. Natal, *Krauss*.

Geogr. Distr. W. Indies.

H. SPICIFERA J. Ag. Table Bay, *Pappe*! Cape Point, *Boodle*! Simon's Bay, *R. Brown*! *Pappe*! Kalk Bay, *E. Young*! *Boodle* Cape Agulhas, *Hohenack*! No. 193. Knysna, *Boodle*! Algoa Bay, *Ecklon*, *Holub*! Port Alfred, *W. Carr*! Kei Mouth, *Flanagan*! Natal, *Gueinzius*, *Krauss*! Cape, *Harvey*!

Geogr. Distr. W. Indies. Indian Ocean.

H. ARMATA J. Ag. Simon's Bay, *R. Brown*! Cape, *Hb. Kew*!

Geogr. Distr. W. Indies.

MYCHODEA CARNOSA Harv. Cape, *Hb. Dickie*!

Geogr. Distr. Australia. Tasmania.

SOLIERIEÆ.

EUCHEUMA SPINOSUM J. Ag. Cape, *Hb. Linnæus*. False Bay, *McMillan*!

Geogr. Distr. Indian Ocean. Cape York. W. Indies.

GELIDIUM ACULEATUM (= ? EUCHEUMA). Port Alfred, *Slavin*! Natal, *Krauss*, *Gueinzius*!

CAULACANTHUS USTULATUS Kütz. Kalk Bay, *Boodle*! Cape, *Scott Elliot*! Muysenberg, *Tyson*!

Geogr. Distr. Mediterranean. Atlantic. China Sea.

MERISTOTHECA NATALENSIS J. Ag. Port Natal, *Hb. J. E. Gray*.

RHABDONIA VIOLACEA J. Ag. Cape, *fide Agardh*.

LOMENTARIEÆ.

LOMENTARIA CAPENSIS J. Ag. Table Bay, *Harvey*. Muysenberg, *Tyson*! Simon's Bay, *R. Brown*! Kalk Bay, *Boodle*! Cape, *Harvey*!

WRANGELIACEÆ.

WRANGELIA PURPURIFERA J. Ag. (= CALLITHAMNION PURPURIFERUM Harv.). Cape, *Harvey*!

CHONDRIEÆ.

LAURENCIA CORYMBOSA J. Ag. Cape, *Hb. Dickie*!

Geogr. Distr. W. Indies.

L. BOTYOIDES J. Ag. Muysenberg, *Harvey*! Kalk Bay, *Boodle*! Cape Agulhas, *Hohenack.*! Cape, *Hohenack.*! No. 572.

Geogr. Distr. Australia.

L. VIRGATA Ag. Seal Island, *Challenger*! Cape Agulhas, *Hohenack.*! No. 184, *fide Grunow*. Cape, *Harvey*!

Geogr. Distr. Australia. New Zealand? W. Indies.

L. FLEXUOSA J. Ag. Cape Agulhas, *Hohenack.*! No. 184. Knysna, *Boodle*! Cape, *R. Trimen*! *Hb. Dickie*!

Var. PUMILA Grun. Natal, *Gueinzius.*

Geogr. Distr. W. Indies.

L. ELATA Harv. Port Alfred, *Slavin*! Kei Mouth, *Flanagan*! Cape, *Harvey*! *Hohenack.*!

Geogr. Distr. Australia.

L. DIVARICATA J. Ag. Cape, *fide J. Agardh.*

Geogr. Distr. In warm seas.

L. FORSTERI J. Ag. Cape, *Harvey*!

Geogr. Distr. Australia.

L. PINNATIFIDA Lam. Seal Island, *Challenger*! Plettenberg Bay, *H. D. Home*! Algoa Bay, *Ecklon.* Cape, *Harvey.* One of the 'Challenger' specimens is named *L. virgata* J. Ag., and referred to under this name in Dr. Dickie's list of Simon's Bay Algæ published in the Linnean Society's *Journal*, vol. xv.

Geogr. Distr. Atlantic. Mediterranean. W. Indies. Australia.

L. PAPILLOSA Grev. Cape Recife, *Bowerbank*! *Hb. Dickie*! Algoa Bay, *Harvey*! Cape, *Hb. Dickie*! *Hohenack.*!

Geogr. Distr. Warm Atlantic. Indian Ocean. Australia. Pacific. Mediterranean.

LAURENCIA HYBRIDA J. Ag. Kei Mouth, *Flanagan*!

Geogr. Distr. Atlantic (Europe). W. Indies.

L. MORIFORMIS Kütz. Cape, *Pappe.*

L. CONCINNA Mont. Port Natal, *Dr. Stanger*, *Gueinzius*! *Krauss.*

Geogr. Distr. Australia.

L. LAXA Grev. Cape, *R. Brown.* Natal Bay, *Krauss.*

L. OBTUSA Lam. False Bay, *McMillan*! Kalk Bay, *E. Young*! *Boodle*! Cape Agulhas, *Hohenack.*! No. 384. (This specimen is included by Grunow under *L. virgata* Ag.) Algoa Bay, *Ecklon*, *Bowerbank.* Natal, *Krauss.*

Var. PYRAMIDALIS. Algoa Bay, *Harvey.*

Var. GELATINOSA. Natal, *Krauss.*

Geogr. Distr. Throughout all seas.

DELISEA SUHRII J. Ag. False Bay, *McMillan*! Cape Agulhas, *Hohenack.*! No. 400. St. Sebastian Bay, *Miss Borcherds*! Algoa Bay, *Ecklon.*

RHODOMELEÆ.

SARCOMENIA INTERMEDIA Grun. Cape, *Jelinek.*

Geogr. Distr. St. Paul's Rocks.

CHONDRIOPSIS CAPENSIS J. Ag. Table Bay, *Harvey*, *Tyson*! Cape Point, *Boodle*! Cape Agulhas, *Hohenack.*! Cape, *Harvey*! *Hb. Dickie*!

Geogr. Distr. W. Indies.

ACANTHOPHORA MUSCOIDES Bory. Algoa Bay, *Bowerbank*!

Geogr. Distr. Warm Atlantic.

Bostrychia tenella J. Ag. Port Natal, *Krauss*! False Bay, *fide Suhr*.

Geogr. Distr. Warm Atlantic and Pacific. Indian Ocean.

B. mixta Hook. et Harv. Muysenberg, *Harvey*. Cape Point, *Boodle*! Simon's Bay, *R. Brown*! Kalk Bay, Knysna, *Boodle*! Cape, *Harvey*!

Geogr. Distr. New Zealand. Tasmania.

B. Binderi Harv. Port Natal, *Krauss*. False Bay, *fide Suhr*.

Martensia elegans Hering. Port Natal, *Krauss*! Nos. 271, 272. *Gueinzius*!

Geogr. Distr. Australia.

Rhodomela subfusca Ag. Table Bay, *Harvey*! Cape Point, *Boodle*!

Geogr. Distr. North Atlantic (to Greenland). North Pacific?

Vidalia serrata J. Ag. Kei Mouth, *Flanagan*! Port Natal, *Drege*!

Placophora Binderi J. Ag. Port Elizabeth; on *Amphiroa*, *Spencer*! Kei Mouth; on *Codium tomentosum* Ag., *Flanagan*! Cape, *Hb. Binder*, *Hohenack.*! *Hb. Dickie*!

Polyphacum Smithiæ Harv. Kei Mouth, *Flanagan*!

Geogr. Distr. Australia, Tasmania.

Polyzonia elegans Suhr. Kei Mouth, *Flanagan*! Algoa Bay, *Ecklon*, *Harvey*! Port Alfred, *Slavin*! Port Natal, *Krauss*! Cape, *Hering*! *Pappe*.

Geogr. Distr. Australia.

Dasya collabens Hook. et Harv. = Asperocaulon collabens Rud. Table Bay, Gordon's Bay, *Ecklon*.

Geogr. Distr. Australia, New Zealand.

D. dubia Suhr. False Bay, *fide Suhr*. Algoa Bay, *Ecklon*. J. G. Agardh (*Spec. gen. et ord.* vol. ii. part 3, p. 874) gives this name as a synonym for *Bostrychia Binderi* Harv. Kützing, however, figures (*Tab. Phyc.* vol. 14, tab. 79) a totally different plant as *Dasya dubia* Suhr, and it is to this that I refer in including it in the Cape Algæ.

D. Callithamnion Harv. On *Galaxaura;* Port Elizabeth, *Spencer*! This specimen is much smaller than that collected by Harvey in Australia, but it is undoubtedly the same species.

Geogr. Distr. Australia.

D. pellucida Harv. Muysenberg, *Harvey*!

Geogr. Distr. Australia.

D. scoparia Harv. Green Point, *Harvey*. Kei Mouth, *Flanagan*! Port Natal, *Krauss* in *Hb. Bind.* Cape, *Harvey*!

Polysiphonia fasciculifera Kütz. Cape, *Pappe*.

P. tenebrosa Harv. Muysenberg, *Harvey*! This species is said by J. Agardh (*Spec. Gen. et Ord.* vol. ii. part 3, pp. 1054–5) to have twelve tubes; I find they vary to sixteen.

P. acanthina J. Ag. (= Rytiphlœa dumosa Harv.). False Bay, near Muysenberg, *Harvey*! Cape, *Scott Elliot*!

Geogr. Distr. St. Paul's Island.

P. ATRORUBESCENS Grev. Table Bay, *Ecklon*. Cape, *Harvey*.
Geogr. Distr. N. Atlantic. Falklands.

P. PROREPENS Harv. Algoa Bay, *Bowerbank*! on *Amphiroa ephedraea* Harv. Port Elizabeth, *Spencer*!
Geogr. Distr. Australia.

P. HERINGII Harv. Port Natal, *Krauss*.

P. CORYMBIFERA Ag. Table Bay, *Harvey*! Natal, *Gueinzius*; on *Cladophora Eckloni*. Cape, *Ecklon*.

P. URBANA Harv. Sea Point, *Tyson*! Cape, *Harvey*!

P. ARENARIA Harv. Hout's Bay shore, near Muysenberg, *Harvey*! Kalk Bay, *Boodle*!

P. INCOMPTA Harv. Muysenberg, *Harvey*! Kalk Bay, *Boodle*! Simon's Bay, *Challenger*! The 'Challenger' specimen is too immature to identify with certainty; it is, however, probably this species.
Geogr. Distr. W. Indies.

P. STANGERI Harv. Port Natal, *Stanger*!

P. VIRGATA Ag. Robben Island, *Tyson*! Table Bay, *Ecklon*, *Wenek*! *Tyson*! *Miss Dreyer*! Camps Bay, *Reynolds*! Kalk Bay, *E. Young*! Cape Agulhas, *Hohenack.*! Knysna, *Krauss*. Cape, *Drege*! *Areschoug*, Phyc. extraeurop. exsicc. No. 10; *Hohenack.*! No. 89; *Harvey*! *Reliq. Brebisson*. Nos. 17, 212; *Trimen*! *Reeve*! *Scott Elliot*! Grunow finds no specific difference between *P. virgata* Ag., *P. complanata* Sp., *P. Gaudichaudii* J. Ag., and *P. fasciculifera* Kütz. I entirely agree with him as to all, except *P. complanata* Ag., which seems to me to resemble more nearly *P. cloiophylla* Ag.
Geogr. Distr. South Atlantic (Brazil).

P. MONOCARPA Montag. Cape, *Gaudichaud*, *Hb. Montagne*!
Geogr. Distr. W. Indies.

P. URCEOLATA Grev. Table Bay, *Harvey*!
Geogr. Distr. N. Atlantic. N. Pacific. Baltic.

P. COMPLANATA Spreng. Cape, *Gaudichaud*, *D'Urville*, *Hombron*. I am disposed to think that these specimens were probably *P. cloiophylla* Ag., as no genuine specimen of *P. complanata* has been recorded from the Cape.
Geogr. Distr. N. Atlantic. Mediterranean.

P. CLOIOPHYLLA Ag. Camps Bay, *Tyson*! Cape Point, Kalk Bay, *Boodle*! Natal, *Krauss*. Cape, *Trimen*! *Reeve*! *Harvey*! *Hb. Dickie*! *Hb. Lenormand*!

Var. PATENS J. Ag. Table Bay, *Zederberg*! *Boodle*! Camps Bay, *Ecklon*. Cape, *Areschoug*, Phyc. extraeurop. exsicc. No. 35; *Harvey*! *Hohenack.*! No. 294; *Reliq. Brebisson.*! No. 97.

P. GAUDICHAUDII J. Ag. Cape, *Gaudichaud*, *Hb. Dickie*! *Brand*!

P. PARASITICA Grev. Cape, *Jelinek*; on *Ptilota Pappeana* J. Ag. Grunow remarks that Jelinek's plant exactly corresponds with Kützing's figure (*Tab. Phyc.* vol. xiii. p. 26, figs. d, e). This leads me to think that the plant he alludes to may have been a specimen

of *Dasya pellucida* Harv., to which the above plate bears a superficial resemblance.

Geogr. Distr. Atlantic. Pacific. Mediterranean.

P. NANA Kütz. On larger algæ, Table Bay, *fide Kützing*.

P. FALCATA Kütz. Cape, *Pappe*.

P. PAPPEANA Kütz. Cape, *fide Kützing*.

P. JUNCEA Kütz. Cape, *fide Kützing*.

P. LINOCLADIA Kütz. Cape, *Hohenack.*! No. 388. The fragment of this plant in the British Museum Herbarium bears no fruit. I therefore cannot with certainty identify the species, and depend on Hohenacker's naming.

PACHYCHÆTA GRIFFITHSIOIDES Kütz. Port Alfred, *Slavin*! Cape, *Hohenack.*! No. 437, sub nomine *Griffithsia brachyarthra* Kütz. Prof. Schmitz, in his *Uebersicht der bisher bekannten Gattungen der Florideen*, places this genus, with a query, under *Polysiphonia*.

Geogr. Distr. Antilles.

RYTIPHLŒA TRUNCATA Kütz. Cape, *fide Kützing*.

KUETZINGIA NATALENSIS J. Ag. Natal, *Krauss*.

(To be continued.)

BRITISH HAWKWEEDS.

BY EDWARD F. LINTON, M.A., AND WM. R. LINTON, M.A.

(Continued from p. 149.)

Hieracium nitidum Backh. Andrew-whinnie, Moffat, *Dumfriesshire. The specimen and root were gathered by Mr. J. T. Johnstone, and handed to us fresh, and proved by cultivation.

H. bifidum Kit. Little Craigindal, *S. Aberdeen. So named for Mr. Hanbury by Dr. Lindeberg. Glen Fiagh, Forfar. Craig Mhor and Carn Mairg, near Fortingal, Mid-Perth (recorded?).

H. bifidum Kit., var. *sinuatum* W. R. Linton, n. var. Near the fall of the Unich Water, above Loch Lee, Forfarshire. The leaves are usually more numerous, rather broader near the base, much more toothed with coarse undulating teeth along each side, more abruptly merging into the petiole. The branching of the peduncles is more divergent, and the phyllaries are white-tufted. In other respects agreeing with the type. We have it also from Coire Ceanmor, Glen Callater, S. Aberdeen, gathered in 1887; and have seen specimens of the same variety in Mr. Hanbury's possession, gathered by the Rev. H. E. Fox on Dove Crags, Fairfield, Westmoreland, in 1890.

H. stenolepis Lindeb. Sgurr-na-Gillean, *Skye.

H. Sommerfeltii Lindeb. Black's Hope, Moffat, *Dumfriesshire. Dr. Lindeberg describes this plant as always having a livid style in Scandinavia. With us it seems most commonly to have a yellow

style, as these Moffat plants of ours have. We gathered much the same form on the Glen Lyon side of Meall Ghaordie, Mid-Perth, in company with the Rev. E. S. Marshall. Also formerly on rocks by the Breakneck Waterfall, Glen Callater, and Little Craigindal, S. Aberdeen, and on Craig Maskeldie, *Forfar. This form has a broader leaf, with more rounded base than the type. In 1888 we found a form with very hairy leaves near Berriedale, Caithness, and near Uig, *Skye, which Dr. Lindeberg accepted with the qualification, "*f. magis vestita.*"

H. Pictorum Linton. We add Glens Doll and Canlochan to other Forfarshire stations for this species. We have also a form from Coire Ardran, Mid-Perth, which Mr. Hanbury pointed out to us was best placed under *H. Pictorum;* it has the same shape of head and phyllaries, and the same general habit and white pappus with a greenish tint, as the type; but, on account of the following differences, it is thought worthy of varietal distinction:—Var. *dasythrix* Linton, n. var. Leaves duller green, more hairy beneath and densely ciliate, slightly and uniformly (not sharply) dentate towards the base; nerves, which are a marked feature in the type, inconspicuous. Peduncles and involucres clothed with numerous black-based hairs of very unequal length. Primordial leaves thickly studded over the upper surface with stiff white hairs, and sub-entire or at most denticulate in garden-grown seedlings.

H. Breadalbanense F. J. Hanbury. Very fine on Ben Lawers, at an altitude of about 3000 ft. Also on lower and higher rocks of Meall-nan-Tarmachan, and in a rocky burn in Coire Fionn, near Killin. The former is, we believe, a new station.

H. rubicundum F. J. Hanbury. We gathered this species in several places near Moffat in 1890, where it was very distinct from any other of the numerous Hawkweeds of the district. It was met with in two or three localities in Carnarvonshire, between Bethesda and the Glyders, by one of us the same year; at Dunbeath and on the Berriedale cliffs, on the E. coast of *Caithness, in 1888; near the Dhuloch, *S. Aberdeen, in 1889; and at Quoys Hamars, in the *Orkneys, as long ago as 1886; and in Glen Canness, *Forfar, in 1884; we have also seen specimens, collected in 1892 by Mr. L. Watt, from the Kilpatrick Hills, *Dumbartonshire. The species has a close alliance with *H. caledonicum*.

H. holophyllum W. R. Linton. Rocks near the road between Buxton and Miller's Dale, Derbyshire. A new station several miles from Dovedale, where it was originally discovered.

H. caledonicum F. J. Hanbury. On one of the sheets containing the plants referred to next was a single specimen of *H. caledonicum* collected by Dr. Boswell in 1875 at Scapa, *Orkney.

H. Boswelli, n. sp. We have had specimens from the extreme N. of Scotland, for some years unnamed, or named only to be revised; *H. Schmidtii*, *H. caledonicum*, *H. Farrense*, *H. caniceps* (*rivale*), and *H. rubicundum* having all been suggested as probable, only to be rejected. Lately, when examining Mr. Hanbury's extensive collections of Hawkweeds, we detected several sheets of this plant, collected by the late Dr. J. T. Boswell in the

Orkneys as long ago as 1875, some of them placed for comparison with *H. Farrense*, some of them not assorted, but amongst the "doubtfuls." This fact of Dr. Boswell's specimens, though abundant, having gone so many years undetermined, confirmed us in the belief that our plant was as yet undescribed. We have it also from the Orkneys, near Kirkwall, whence most of Dr. Boswell's specimens came, from the neighbourhood of Sligachan, Skye, and more plentifully from near Uig, and from the Vaternish Cliffs, in the north-west of that island, and also from the strath of Dunbeath, Caithness. Besides these stations, which are all in the North of Scotland, we have what is evidently the same plant from rocks of Meall-nan-Tarmachan by Lochan-na-Lairige, and from Coire Fionn, near Killin, both in Mid-Perth. The involucre is less floccose and the margins of the phyllaries less markedly white, and the Coire Fionn plant is more glandular, but otherwise these Perthshire specimens agree well with the typical plant. The description is drawn up (by E. F. L.) partly from Dr. Boswell's sheets, partly from numerous Skye specimens; and the name is given in memory of one who not only was the first known collector of this species, but paid much attention to the genus during many years before his death.

H. Boswelli Linton. Stem 6–16 in. high, usually rather rough with bulbous bases of long white hairs, sinuous, floccose above, hardly branched. Leaves ovate-oblong or narrow ovate-acuminate, thinly hairy below, glabrous above, ciliate with numerous soft hairs, waved in outline and denticulate or dentate, very thin in texture, and with a strong tendency to turn yellow or yellowish green when dried, with some purplish tint here and there; petioles rather short, silkily hairy. Stem-leaf when present shortly petioled, ovate-acuminate to lanceolate, dentate, but frequently absent, and commonly so in the Orkney specimens. Heads of moderate size in a few-flowered corymb, the wild plant seldom bearing more than three; peduncles cano-floccose with many scattered hairs, and usually some few glands; involucres ovoid, slightly constricted in flower; phyllaries rather broad, clothed with many whitish hairs and a few glands near their base, floccose, especially at the margin and the top, subulate, very obtuse. Ligules glabrous above. Styles livid yellow, often only slightly discoloured. Pappus pale brown from the first. It may be added that on specimens collected by one of us in Orkney, Dr. Lindeberg (to whom it was sent by Mr. Hanbury) remarked, "Mihi ignotum. Capitulis foliisque distinctum."

H. murorum L., var. *ciliatum* Almq. Rocks, Strome Ferry, *W. Ross. Limestone rocks by the road between Buxton and Miller's Dale, *Derbyshire. It has also been sent us unnamed from the Kilpatrick Hills, *Dumbartonshire, collected by Mr. L. Watt.—Var. *pulcherrimum* F. J. Hanb. A beautiful plant from rocks, Glyn Neath, *Glamorgan, we put to this variety, though it differs in the shape of the base of the leaf.—Subsp. *H. sarcophyllum* Stenström. In some abundance about Black's Hope and Midlaw Burn, near Moffat, Dumfriesshire. — Var. *micracladium* Dahlstedt.

Rocks by the falls of the Unich Water, above Loch Lee, *Forfarshire. We met with this variety also among specimens collected by the late Dr. J. T. Boswell in 1853, in the possession of Mr. F. J. Hanbury, from Arniston, near Edinburgh.

H. duriceps F. J. Hanbury. A plant from Allt Dubh Galair, Glen Lochay, Mid-Perth, cannot be fairly separated from this. Mr. Hanbury has referred in his paper (vide *Journ. Bot.* 1892, p. 260) under this name to a plant from Sneasdal, Skye, but from the material we possess we think this identification will not stand. We can, however, report it from Ingleborough, *Yorks (v.-c. 64), collected by Miss R. F. Thompson; these limestone specimens admirably matching Mr. Hanbury's gatherings from the limestone at Inchnadamph. We also regard a plant from various ravines near Moffat, *Dumfriesshire, as this species.

H. rivale F. J. Hanbury (*H. caniceps* F. J. H.). Lower rocks of Sgurr-na-Gillean, *Skye. Ben Hope, Sutherland (1886). Glen Doll, *Forfar. Coire Ceannmor, *S. Aberdeen.

H. cæsio-murorum Lindeb. (*H. murorum* L. **cæsio-murorum* Lindeb. in Dahlstedt's set, Fasc. i. 64). Wooded slopes south of Braemar, as well as the original station by the Quoich, S. Aberdeen. Glen Shee, *E. Perth. Between Meall Dhuin Croisg and Craig Caillich, in wooded bed of stream; Glen Lyon, both in the lower part of the glen above Fortingal, and up the Allt Roro, Mid-Perth. Dahlstedt's excellent sheets of this form (which is no hybrid) illustrate well the modifying effects of exposure to sun and shade on Hawkweeds generally, and on this in particular.

H. cæsium Fr. Allt Dearg Mor, and Sgurr-na-Gillean, Skye; and the Glen Lyon side of the Ben Lawers range, Mid-Perth.

H. cæsium Fr., var. *alpestre* Lindeb. The Glen Lyon side of the Ben Lawers range, Mid-Perth; and L. Wharral and Glen Doll, *Forfarshire.

H. cæsium Fr., var. *insulare* F. J. Hanbury. Rocks two or three miles north of Ben Lawers, Glen Lyon, at an altitude of about 2000 ft., and also in the valley of the Glen, about five miles from Fortingal.

H. cæsium Fr., var. *petrocharis* Linton, nov. var. A handsome form of mountain rocks, chiefly noticed in the Breadalbane range, which at our suggestion in the first place Mr. Hanbury was willing to associate with his var. *insulare;* but it is so different under cultivation from that or any other *cæsium* form that it may deserve specific rank. In fact, it was considered for a while to be a dark-styled var. of *H. Breadalbanense.* Cultivation, however, disallows this. The chief marks of distinction from *H. cæsium* Fr. are the elliptic-oblong leaves, primordial broad and rounded at both ends and spotted, later narrower oblong, but much broader and blunter than the type, unspotted, and *denticulate* rather than dentate. The flowers are much like those of var. *insulare,* neat, handsome, and of a deep golden yellow. Ligules glabrous (unless a Glen Doll plant with darker and less floccose heads and ciliate ligules may find its place here). Styles uniformly livid. Involucre much more glandular than Fries' *cæsium.* The plant is from 6 to 14 in. high, the smaller

specimens from exposed rock being usually monocephalous, but in the garden the stem produces numerous heads. The stem-leaf is *subentire* or denticulate, oblong, narrowed to both ends, when present, but often wanting. We have this from Ben Lawers, rocks of Meall-nan-Tarmachan near Lochan-na-Lairige, Craig Caillich, and a smaller summit between Craig Caillich and Meall Dhuin Croisg, all in Mid-Perth.

H. euprepes F. J. Hanbury. Among our numerous gatherings of this species, there has appeared to be a divergence of form, which comes out most distinctly in the leaf characters, both of which Mr. Hanbury regards as *H. euprepes*. There is (*a*) a more hairy plant with rather broader leaves, which Mr. Hanbury says is just his type, leaves "softly hairy on both surfaces," and "peduncles very floccose, sparingly hairy and setose." A still more common form, we think, is a plant (*b*) which at Mr. Hanbury's suggestion is here given as a variety (var. *glabratum* Linton) with leaves usually narrower, ovate-lanceolate to lanceolate, commonly strongly dentate, glabrous on the upper surface, and thinly hairy on the principal nerves beneath; the peduncles less hairy and often less glandular, not unfrequently without hairs. Var. *glabratum* has been gathered by us in the Clova Valley, and in Glen Doll, and on rocks above Loch Wharral, Forfar; on Craig Caillich, and lower rocks of Meall-nan-Tarmachan, and also in Glen Lyon, Mid-Perth. We record the type from the Midlaw Burn, *Dumfriesshire.

H. stenophyes W. R. Linton, n. sp. Dull green, 1½–2 ft.; primary leaves orbicular, outer ovate-oblong, with a few blunt teeth, with bulbous-based hairs on both surfaces; inner long-petioled, lanceolate-oblong, acute, with cuneate base, narrowed gradually into the petiole, coarsely toothed, all the basal leaves forming a spreading rosette; stem-leaf one usually below the middle, stalked, lanceolate, acuminate, with few large acute patent teeth; stem with few white hairs below, floccose above, smooth, 3–8-headed, with dark cylindrical smooth-looking heads; peduncles arcuate, floccose; phyllaries broad, dark greenish, inner pale-edged, acute, clothed with a few setæ and many black-based hairs, floccose at the base; ligules rich yellow, tips glabrous; styles livid; pappus light fuscous. The principal features are the spreading rosette of long-petioled narrow-oblong leaves, the long narrow-acuminate clean-cut stem-leaf, the clean-looking dark handsome heads, the elegant cup-shaped convex-topped inflorescence. It occurs on Black's Hope, Moffat, Dumfriesshire; and at Bettyhill, Sutherland, where it has been gathered by one of us in 1888; we have a cultivated specimen of the same plant from the garden of the Rev. E. S. Marshall, the root (No. 205) believed to have been brought from mountains near Crianlarich, Mid-Perth. A specimen sent us by Mr. L. Watt, from the Kilpatrick Hills, Dumbartonshire, appears to be the same species. With little hesitation we also place here some plants gathered by Mr. Hanbury at Alltnaharra, and queried by him at one time as a form of *H. orarium* Lindeb., and later on as *H. duriceps*. It seems to differ from *H. stenophyes* only in its more glandular peduncles, and ligules (presumably) more or less

ciliate. This new species fits into a place between *H. cæsium* and *H. vulgatum;* more exactly, it comes either just before or just after *H. angustatum* Lindeb., perhaps best just before.

H. angustatum Lindeb. We have a good series of specimens of the type of this species, the same which grows in the Lake district, from several localities near Moffat, *viz.*, from Crofthead Linn, the Beeftub, and Evan Water; also from whin-rock by a small burn fourteen miles N. of Langholm; all from *Dumfriesshire, contributed by Mr. G. F. Scott-Elliot. This plant, however, is by no means identical with the *H. angustatum* Mr. Hanbury has referred to in his paper, that we gathered on Little Craigindal and at the Unich Water; and Mr. Hanbury tells us in a letter that he now regards these Aberdeen and Forfar specimens as *H. angustatum* var. *elatum* Lindeb.

(To be continued.)

SHORT NOTES.

The Abnormal Spring.—You will have received many communications about the abnormal character of the present season. It is so abnormal that I think a careful record of details with dates should be rendered permanent by printing. Possibly some of the following notes may be useful to you. On the 6th May I noted various banks in Surrey which were golden-yellow with *Hieracium Pilosella*. On the 8th May, near Leith Hill, I gathered *H. murorum* in flower (20 in. high). On 14th May, I gathered in the New Forest *H. sylvaticum* in flower (and "off" flower). On 18th May I gathered a large bundle of *Erica Tetralix* in full flower (at Bournemouth. Many plants (owing to the drought) have very short stems; for instance, the Marsh Thistles are in flower, plentifully, with stems less than 1 in. A great number of annuals, usually regarded as autumn annuals, have already run their course. On 6th May I collected a quantity of *Valerianella Olitoria*, not only in ripe fruit, but with the whole plant whitened as seen in cornfields after harvest in Sept. The plants are very fairly developed, and have abundance of perfect seed ripe. The small *Potamogeton* I enclose (*P. polygonifolius* Pour.) has, on mud nearly dried up, flowered abundantly in the state I send it you, *i. e.*, with stems 1–2 in. long. The same species, abundant also in the streams, shows no signs of flowering; but the warmth of the water has caused a luxuriant vegetative growth. This is the case with the other Potamogetons (in water) and the water plants generally, which do not appear very much earlier in flowering than in some other seasons. In the bogs on the hill-slopes, which usually dry up from the lower end, I looked particularly at the two Droseras and *Hypericum Elodes*, which I saw in every state of moisture, from saturation to desiccation. In no one case could I find one example of any one of these three plants shooting for blossom. These Droseras appear to calculate that, after enduring any desiccation that could be reasonably anticipated, they will be able to "come again"; and so to

have made up their minds to play a waiting game. The *Valerianella*, on the other hand, feared the extinction of its race unless it could get through its complete course before it should be dried up. I have spoken above of plants which I have gathered in some quantity. I have gathered a few examples in full flower of nearly all the common autumnal weeds, such as *Jasione montana*, *Senecio erucæfolius*, *Centaurea Scabiosa*, *Erythræa Centaurium*, &c. — C. B. Clarke.

Sonchus palustris in Oxfordshire. — About four years ago the Rev. H. Elwell, while visiting Oxford, told me he thought he had seen *Sonchus palustris* in the county when he was an undergraduate about 1867. He remembered the locality, and conducted me to it, but he was not absolutely certain if he had hit upon the exact deep ditch by a high hedge in a sequestered part of the county, far from habitation, where he first saw it. Our search was unsuccessful, and I am bound to say my own opinion was that a form of *S. arvensis* had been mistaken for it. The locality, though damp, was not quite my idea of the place to find *S. palustris*, and the record remains unconfirmed. Recently Mr. Riddelsdell told me he thought *S. palustris* occurred in a certain district, which at once reminded me of the previous statement, and he was good enough to conduct Mr. F. T. Richards and myself to it. There, beyond doubt, were about thirty plants of the true *S. palustris* in what I have no doubt is a native station. It is a relic, probably, of a paludal vegetation which drainage and cultivation have nearly eradicated. I hesitate, for obvious reasons, to localise it precisely.—G. Claridge Druce.

Polygala oxyptera Reichb. in S. Hants. — The Messrs. Linton and myself met with this plant on May 3rd, between Holmsley and Sway. It is recorded for Wight and N. Hants. We also observed *Eriophorum gracile* Koch at Holmsley, which appears to be a fresh station for it.—Edward S. Marshall.

Rubus spectabilis naturalized.—Is it worth while warning the young botanists coming on, or to come on, that *Rubus spectabilis* Pursh is not really a native plant? In a wood near Hythe (Sandling), Kent, where I was a few days since, it was even more commonly diffused throughout the wood than *R. Idæus*. How it got there I do not know; it may have been planted as cover for game, or for the sake of its fruits as food for pheasants, or it may have been thrown out originally with garden refuse, or sown by birds. There is, however, no garden very near at hand. The plant throws up suckers abundantly, so that once it finds itself comfortable it makes itself very much at home—too much so in my garden.—Maxwell T. Masters.

Lonicera Caprifolium in West Kent (p. 153). — On May 23rd Capt. Wolley Dod kindly took me to his station for this plant, which was already past the prime of its flowering. I am quite of his opinion as to its not having been planted by man; and the only *prima facie* objection to its being a true native lies in the fact that but one specimen occurs there. No introduced plant was near, excepting some larches lower down the hill, with which it had

clearly no connection. The continental distribution (chiefly southern and south-eastern) is, however, somewhat unfavourable to the theory of its indigenousness.—Edward S. Marshall.

Euphorbia Esula in Bucks.—Through the kindness of Mr. Stanton and Mr. Tufnail, I was informed last year that a *Euphorbia* grew on the banks of the Thames between Henley and Marlow, on the Bucks side of the river. I was down in September, but was too late to get satisfactory plants. This year I have again visited the locality, and find the plant to be *E. Esula* L., growing in three or four patches, away from houses. Sir E. Smith, in *E. Bot.*, considers it to be a native of England, as he says the plant was not cultivated in gardens. The figure in *E. Bot.* is fairly good, but badly coloured, and the cusps of the glands drawn so as to represent them below the gland. In the reproduced plate in Syme's *E. Bot.* they have almost disappeared, and the gland is represented as obovate, thus giving a wrong impression.—G. C. Druce.

NOTICES OF BOOKS.

The Naiadaceæ of North America. By Thomas Morong. (*Memoirs of the Torrey Botanical Club.*) Issued March 15th, 1893. Price 2 dollars.

Everyone who has worked at *Potamogeton* will agree with Dr. Morong as to great difficulties which beset any attempt to give a satisfactory account of the order. If, therefore, we criticise his work on some points, it is with the knowledge of these difficulties, and our criticisms are mainly suggestive.

Dr. Morong includes in the order the suborders *Juncagineæ*, *Lilaeæ*, and *Naiadeæ;* embracing the genera *Triglochin*, *Scheuchzeria*, *Lilæa*, *Potamogeton*, *Ruppia*, *Zannichellia*, *Naias*, *Zostera*, and *Phyllospadix*. He gives a key to the thirty-seven species of *Potamogeton* described as North American. Of these he claims fourteen as confined to North America, a claim which cannot be supported with all. In some cases the separating characters would not hold good in European species, such as the absence of "propagating buds."

Before running rapidly through the species, we must express regret that the geographical distribution has not been extended—here and there it is noted that such a species occurs in Europe or Asia, but only occasionally—so as to show their northern extension in Canada to the "wooded country" to the south of the Arctic Sea. The western and eastern extensions are fairly well given.

We may note some of these omissions. *P. natans* L. occurs in Central America (*Hemsley*). No mention is made of *P. plantagineus* Du Croz var. *jamaicensis* Grisebach (*Fl. W. Indies*), which occurs also in St. Domingo! and Hog Island! (Bahamas). *P. occidentalis* Sieber (= *P. fluitans* Griseb.) is omitted; it occurs in Porto Rico! St. Domingo! Jamaica! Martinique! and Cuba! *P. Claytonii* Tuck. occurs also in Jamaica! and Porto Rico (*Sintenis*!); the

difficulty as to the name this ought to bear will, we think, be disposed of by calling it *P. epihydrum* Rafinesque (1808).

Dr. Morong is wise in retaining Tuckerman's *P. Lonchites* for the present; there is yet a difficulty as to this, and two or three of the forms of *P. fluitans*. It should be given for Porto Rica and Antigua. We do not think Dr. Morong has done well by making *P. Faxoni* a species; some of the specimens are really nothing but *P. Lonchites*, others may be hybrids. *P. heterophyllus* occurs in Greenland! and Arctic America, 56°! *P. angustifolius* Presl (*Zizii* Roth.) occurs in Cuba (*Wright*!). To the distribution of *P. lucens* L. may be added Florida! Jamaica, Cuba! St. Lucia! and Texas! *P. perfoliatus* L. also occurs in St. Lucia! *P. crispus* L. is considered an introduction; it would have been of interest if Dr. Morong could have traced it back. There are specimens in Mr. Cosmo Melvill's herbarium, gathered in 1841–2 by Gavin Watson. Dr. Gray seems to have first noted it in 1863, but remarks that Tuckerman had seen a specimen in a European herbarium said to be from Delaware. We believe specimens for Central China (*Dr. Henry*!) belong to *P. Hillii* Morong. Unfortunately there is no fruit on Dr. Henry's specimens, but in all else they seem identical.

Dr. Morong claims *P. foliosus* Raf. (= *P. pauciflorus* Pursh) as peculiar to N. America, but it has (besides occurring in Porto Rico! and Cuba!) a very interesting outlying habitat in the Sandwich Isles!; these are "2350 miles from the nearest part of the American coast—the Bay of San Francisco."* Does the following extract† help to explain how it got to these islands?:—"The existing currents . . . . strike the Hawaiian group (Sandwich Isles) from the north-west, bringing huge pine logs from Oregon." Judging from the account of the bird-life of these islands,‡ they could have little to do with the transportation of an aquatic plant. Perhaps the Brazilian specimens named "*pauciflorus*" may really be *tenuiflorus* Philippi? The var. *californicus* of this occurs also in Mexico!

On page 41 Dr. Morong introduces a form of nomenclature that seems to us much to be condemned. He raises *P. pusillus* L. var. *major* Fries to specific rank as "*P. major* (Fries) Morong," while there already exists for the plant a certain and undoubted name, *P. Friesii* Ruprecht! We think there is a prior authority for the reduction of *P. panormitanus* Biv. to a variety. *P. pusillus* should have been recorded for Greenland! *P. hybridus* Michx. is displaced because the name "had previously been employed by Thuillier for *P. heterophyllus*, Fl. Paris, 1790"; but here *Pentagna Inst.* vol. ii. 289 (1787), should have been quoted. Dr. Morong has no certain record for *P. hybridus* in Canada, but there is a specimen in the Glasgow Herbarium gathered by one of the Franklin Expeditions. *P. Spirillus* occurs in Jamaica!; *P. filiformis* in California (*Herb. Hance* in *Herb. Mus. Brit.*) and Greenland, "69°"! To *P. pectinatus*

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* Wallace, *Island Life*, 2nd ed. p. 310.

† Brigham in *Proc. Boston Soc. of Nat. Hist.* p. 12, 1868.

‡ Wallace, *l. c.* pp. 313-316.

L. should be added Greenland! St. Lucia! Guatemala! Panama! and Brit. Honduras!.

On page 52, Dr. Morong raises "*P. pectinatus ? latifolius* Robbins" to specific rank, but this is untenable, as Dr. Robbins overlooked the prior var. *latifolius* of Meyer (*Chlor. Hann.* (1836)). There is a specimen of this rare form in the Brit. Mus. Herb. from "Springs, Huachanca Mountains, Sept. 1882, J. G. Lemmon and wife."

Dr. Morong has overlooked the record of Prof. Macoun as to *P. Robbinsii* "fruiting in the Somas River at Albania, on the west coast of Vancouver's Island," *Cat. Can. Pl.* p. 89, 1888—the third known occurrence. He takes no notice of *P. tenuifolius* H. B. K. "New Mexico"; of *P. angustissimus* H. B. K. "Mexico"; nor of *P. vaginatus* Turcz. "Saskatchewan, *Bourgeau*, 1858" (*Kihlman in Bot. Notiser*); it also occurs at Buffalo Lake, lat. 56°, *Macoun*!

References to old American authors are almost wanting; and no list is given of the undecided published names. The fifty plates are effective, as far as they go, very few dissections being given. *P. confervoides* Reich. = *P. Tuckermanni* Robbins is perhaps the least satisfactory, but they serve admirably to show the broad distinction between the various species. This notice is now too long to allow of entering into the specific rank of some of the forms raised to species by Dr. Morong.

ARTHUR BENNETT.

The Journal of the Kew Guild, an Association of Kew Gardeners, past and present. May, 1893. 8vo, pp. 57.

THE idea of forming a Gild for Kew gardeners, past and present, is an excellent one, and can hardly fail to commend itself not only to those for whom it is more especially intended, but to all who realise the benefits of social intercourse and solidarity. Anything that binds men together for a common object, or strengthens old associations, is a power for good; and Mr. Dyer, of whom a not very pleasing portrait appears as the frontispiece to the *Journal*, has done well to encourage the formation of the Kew Gild. We have never seen our way to adopt the—as it appears to us—exaggerated language in which the praises of Kew are sounded by its officers and friends; but it is impossible not to recognise the influence which the Royal Gardens have exercised upon the commerce and horticulture of the world, as well as in botanical science, although that does not come within the scope of the Gild or its Journal.

From the *Journal* (which is to be issued annually on the 1st of May), we learn particulars of the numerous opportunities for advancement which are presented to young gardeners, and which have undoubtedly done much to secure for them the high positions which so many have subsequently attained. Four courses of lectures are given annually by Mr. J. G. Baker, Mr. J. R. Jackson, and others; the notes taken by the men being afterwards written out and revised by the lecturers. There is a Mutual Improvement Society, now twenty years old, which meets weekly in the Garden

Library during six winter months, for reading and discussion of papers connected with gardening. There is also a "British Botany Club" which meets for weekly excursions during the summer.

Among the contents of the *Journal* are letters from Kew men at home and abroad, including some interesting if rather trivial "Reminiscences of Kew" by Mr. Hemsley. The List of "Living Past Kewites" tells more forcibly than any narration could do of the widespread influence of Kew, and of the various excellent posts which are open to a gardener who sticks to his work and uses his opportunities. We hope that some day the *Journal* may give us a list of those who have died; such a list would contain many names at least as distinguished in the annals of botany and horticulture as any of those now living.

The "Garden Notes" seem to us the weakest part of the *Journal*. We are glad to learn that "Mr. Nicholson is preparing a catalogue of the hardy ligneous plants cultivated in Kew," but we should have been more pleased with some definite announcement as to the publication of the *Guide to the Gardens*, the absence of which is a serious drawback to the intelligent appreciation of them. Considering the energy displayed at Kew in so many directions, it is to be regretted that this important adjunct to the usefulness of the Gardens should be allowed to remain for many years out of print.

The Ferns of South Africa. By Thomas R. Sim, F.R.H.S. London: Wesley. 8vo, pp. iv, 275. 159 plates. Price £1 1s. 0d.

We are glad that Mr. Sim has given us a comprehensive handbook of South African Ferns, the usefulness of which we suggested when noticing (*Journ. Bot.* 1891, 253) his *Ferns of Kaffraria*. That work may indeed be regarded as a forerunner of the present, which includes the plates and some matter of the earlier undertaking. Mr. Sim has evidently aimed at producing a book which shall be useful to the intelligent collector, and at the same time acceptable to the professed botanist; and, so far as we can judge, he has succeeded admirably. For the former, the introductory chapters are well adapted; while the summary of distribution, based on Mr. Bolus's arrangement, is carefully worked out, although our knowledge of African and Mascarene ferns is more extensive than Mr. Sim seems to be aware of.

The descriptions are full, and evidently for the most part based upon ample material. We are glad to find that Mr. Sim has extended to the species the key which he has provided for the orders and genera. Such keys are of great help to the student who employs them intelligently, although they sometimes lead the too-confiding novice astray. The large number of plates will prove a material aid in determining the species, and reflect great credit upon the author, who is also the illustrator of the work. The local distribution is carefully worked out, and the synonymy is given very fully, although we occasionally doubt whether the correct (*i. e.* the oldest) name has been retained. The plan of placing a period between the name and the authority—thus, "*Pteris Buchanani.*

Baker MSS."—although not unknown, is unusual and undesirable: and such a name as this, taken at random, leaves us in doubt whether this plant has actually been *described* before, although Mr. Sim cites the name from two lists.

There are interesting facts scattered up and down the pages, such as the occurrence of the New Zealand and Australian *Pteris tremula* at Natal as an escape from cultivation. The book is well printed, although misprints are somewhat frequent: and Mr. Sim has evidently known how to utilise the opportunities which he possesses as Curator of the Botanic Gardens at King William's Town.

Le Thé. Botanique et Culture, Falsifications et richesse en Caféine des différentes espèces. Par ANTOINE BRÉTRIX. Avec 27 figures. Paris: J. B. Baillière et Fils. 1892.

THE culture, preparation, and commercial aspects of the Tea-plant have had so many exponents that it would appear almost impossible that another book on the subject could find readers; but the little work of some 156 pages now before us is sufficiently distinct in its character and treatment of the matter it deals with from those that have gone before to guarantee a circulation amongst many who want to know something more than the popular and commercial aspect of the question. No book treating of such an important product as tea would possibly be considered complete without a botanical description of the plant, culture, preparation, and so on; hence we find that the first chapter is devoted to the botany of the tea-plant, the next on culture, the third on the preparation of green and black teas, &c., followed by others on their physiological and medicinal action, the microscopical study of the leaves of the true tea-plant, and of those used as adulterations. Though it is possible that the leaves of the plants mentioned in this chapter have been detected in tea, it is to be hoped that in these days, when its cultivation has so widely extended and the sources of supply so much increased, oak, ash, beech and willow leaves do not form a part of our commercial tea. This, and the succeeding chapters on the chemistry of the tea-plant are the most striking and original portions of the book, and the portions for which it will probably commend itself.

J. R. J.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (Nos. 18, 19). — V. von Borbás, *Euphrasia transiens* Borb., sp. n. — (No. 22). J. G. O. Tepper, 'Flora of Roebuck Bay, N.W. Australia.'

Bot. Gazette (March 20).—J. E. Humphrey, '*Monilia fructigena*' (1 plate). — H. L. Russell, 'Non-parasitic Bacteria in Vegetable Tissue.' — F. B. Maxwell, 'Comparative Study of Roots of *Ranunculaceæ*' (3 plates).—J. H. Newell, 'Flowers of Horse-chestnut.'—Memoir of Francis Wolle (1817-93). — A. S. Hitchcock, 'Hybrid

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Bot. Magazine (Tokio).—(Mar. 10). R. Yatabe, *Tricyrtis nana*, sp. n.

Bot. Notiser (häft. 3).—J. R. Jungner, 'Om regnblad, daggblad, och snöblad' (1 plate).—A. Y. Grevillius, 'Om vegetations förhållandena på de genom sänkningarne åren 1882 och 1886 nybildade skären i Hjelmaren.' — H. Hedström, 'Om hasselns forntida utbredning i Sverige.' — S. Murbeck, '*Pulmonaria angustifolia* L. × *officinalis* L. = *obscura* Dumort. (*P. notha* Kern.).' — H. W. Arnell, 'Om släktnamnet *Porella*.' — O. Vesterlund, 'Växtnamn på folkspråket.'

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Sporocarp of *Pilularia americana*' (1 pl.). — H. W. Conn, 'Free Nitrogen Assimilation by Plants.' — A. F. Foerste, 'Casting-off of Tips of Branches' (2 plates).—A. Hollick, 'New Fossil Palm from Long Island' (*Serenopsis*, gen. nov.: 1 plate).

Erythea (May).—T. Howell, 'New Plants of the Pacific Coast.' —M. A. Howe, 'Two Californian Cryptogams.' — E. L. Greene, 'Corrections in Nomenclature.'—H. Baillon, 'On Generic Nomenclature.'

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Journal de Botanique (May 1, 16). — E. Bonnet, 'Plantes de Tunisie.' — E. Bescherelle, 'Hepatiques de Guadeloupe et Martinique.' — (May 1). P. Vuillemin, 'Sur les affinités des Basidiomycètes.' — (May 16). G. de Lagerheim, 'Sur une Cypéracée entomophile' (*Dichronema ciliata* Vahl.).

Journ. Linn. Soc. (xxix., No. 201: May 15). — C. T. Druery, 'An Aposporous *Lastrea*' (1 plate). — G. Gammie, 'Sikkim Tree-Ferns.' — G. Henslow, 'Theoretical Origin of Endogens from Exogens.'—A. Lister, 'Division of Nuclei in Mycetozoa' (2 plates).

Oesterr. Bot. Zeieschrift. (May). — V. Schiffner, 'Morphologie und systematische Stellung von *Metzgeriopsis pusilla*' (1 plate).— H. Zukal, 'Mykologische Mittheilungen.'—A. Nestler, 'Eigenthümlichkeiten im anatomischen Bau der Laubblätter einiger Ranunculaceen.' — L. Adamovic, 'Neue Beiträge zur Flora von Südostserbien.' — Zimmeter, '*Aquilegia Einseleana* & *A. thalictrifolia*.'— J. Murr, 'Zur Flora von Nordtirol.'

BOOK-NOTES, NEWS, &c.

The most interesting feature of the Annual Meeting of the Linnean Society on May 24th was the presentation of the Society's Gold Medal to Professor Daniel Oliver, F.R.S. On handing Prof. Oliver the medal, the President, Prof. Stewart, made the following speech:—"On handing you the Gold Medal of the Linnean Society, it is my pleasing duty to recall to the memory of the Fellows present, though only shortly and imperfectly, some of the more interesting and important of your labours in Botany;—those more particularly which have induced the Society to confer this Medal upon you. First I would call attention to the very wide character of your botanical work. In 1850 you discovered, in Connemara, *Naias flexilis*, a genus new to the British Flora. In 1859 you published, in our *Transactions*, a paper on the structure of the stem in *Caryophylleæ* and *Plumbagineæ*, illustrated with plates drawn by yourself; and in 1862 you contributed to the *Natural History Review*

a memoir on the structure of the stem in Dicotyledons, with a critical bibliography of the subject. Then, in your series of eighteen papers in the *Journal* and six in the *Transactions* of this Society, you turned to Systematic, Morphological, and Geographical Botany. These papers relate to all branches of Phanerogams; there are several illustrating the flora of Tropical Africa, including the whole of the 29th vol. of our *Transactions*, with its 136 plates; and you paid detailed attention to the *Loranthaceæ*, the *Utricularieæ*, the *Hamamelideæ*, and the *Olacineæ*, your artistic talents enabling you to illustrate beautifully and accurately these memoirs. The second point I would mention is the high excellence of this work. The investigations of more recent workers have confirmed, almost without exception, the accuracy of your observations and conclusions regarding the new genera and species established in these memoirs and elsewhere, notably in the *Icones Plantarum*, which you have now edited for three years wholly yourself. Thus also, in 1862, when geologists were discussing the Atlantis hypothesis, you showed in your paper in the *Natural History Review* that the botanical evidence was against that hypothesis, but that a close connection existed between the Flora of Tertiary Central Europe and the existing Floras of Japan and the United States. The subsequent progress of geological discoveries has proved the soundness of the views advanced in your contribution to the controversy thirty years ago. The third point—and I desire to impress this on the members of the Society—is that much of your work is as yet unpublished; it is enshrined in the Kew Herbarium, where it has contributed largely to Bentham & Hooker's *Genera Plantarum*, and to numerous memoirs which have been prepared wholly or in part at Kew. The last point I need touch upon is your educational work. Your *Lessons in Botany* is the most useful elementary book we have; your *Illustrations of the Natural Orders* and your Guides to the Museum and Gardens at Kew have been eminently useful in spreading among the people an interest in Botany, and have led many to further study. As Professor of Botany for thirty years in University College, London, you have trained many pupils, now highly distinguished—not least among these being your successor in the Professorial chair. With every good wish, I hand you the Gold Medal of the Society."

"The Russian Thistle" is the name by which *Salsola Kali* var. *Tragus* is known in America, although it is there sometimes known still more inappositely as "Russian Cactus." "It is one of the worst weeds ever introduced into the wheat-fields of America": and Mr. L. H. Dewey has just issued (U. S. Dept. of Agriculture, Farmers' Bulletin, No. 10) a pamphlet dealing exhaustively with the pest, pointing out clearly and simply its modes of distribution and the conditions affecting its growth, and suggesting remedies for its extermination. "Place a Russian thistle in each school-house," runs one of the "recommendations," "so that the pupils may become familiar with it, and teach them to kill it wherever they find it as they would kill a rattlesnake." Two plates accompany the report.

Another of the older generation of English botanists has passed away in the person of Mr. Thomas Westcombe, who died on May 9th at his residence, Britannia Square, Worcester, at the age of seventy-eight. Of a very retiring and modest disposition, and nearly confined to his house for some years by ill-health, he was probably known to but few of our younger botanists. But few of those who knew him in his vigour, and none of those who were privileged to join him in botanical excursions, will forget the indomitable energy, apparently incapable of fatigue, with which he followed his favourite pursuit, notwithstanding, or perhaps rather assisted by, his spare and emaciated form, and the extreme abstemiousness of his habits. The present writer has still a lively recollection of the tax on his endurance involved in such an excursion which he, then in his teens, undertook with Mr. Westcombe some forty years ago, in Hampshire and the Isle of Wight, in search of such rarities as *Spiranthes æstivalis*, *Calamintha sylvatica*, *Leersia oryzoides*, and *Polypogon littoralis*. Mr. Westcombe was of that Quaker community which has produced such naturalists as Prof. Oliver, Mr. J. G. Baker, and the two Bradys. He lived a bachelor life with three unmarried sisters; and his great delight, in the days when he was past active work, was his garden of wild flowers and his greenhouses.—A. W. B.

The *Kew Bulletin* has begun to appear again, a double number, for February and March, having made its appearance towards the end of May. Mr. Rolfe describes some new Orchids, but there is nothing else of botanical interest in the number. It is to be regretted that publications in which new species are described should be dated in a manner so calculated to mislead.

Mr. E. M. Holmes contributed some "Suggested Emendations in Botanical Terminology" to the Botanical Congress at Genoa last year, which have been printed in its *Atti*. He wishes to "render more uniform the terminology in use for cohorts, natural orders, suborders, tribes," and "to discriminate in print between specific names derived from vernacular names, proper names, and old generic names." "All vernacular names should be preceded and followed by an inverted comma, thus—Diospyros 'Kaki'": "the name of an old genus when used as a specific name should be written in italics, and spelt with a capital letter, thus—Rhamnus *Frangula*." We do not imagine that these proposals will meet with much acceptance among botanists, nor can we see that any benefit could arise from their adoption.

The *Westminster Gazette* of May 25th has an amusing account of the Royal Horticultural Society's great show held on that day. After referring to "our dainty friend the *Ixia verdiflora*," and to "gentians and all the rest of the fragrant things," the writer says: "Mr. Sander's orchids fill the centre of this tent. He has one new flower. This 'only ewe lamb' is the *Ari saema fimbriata*. We have seen plenty of better orchids, but in orchids quaintness counts for more than beauty, and the *Ari saema*, &c., is not devoid of that."

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS Index, which has been published in the 'Journal of Botany' during the last four years, has elicited much more general interest than its compilers expected. It originated in the supposition that the want of such a reference-list to bygone workers in Botany, which we ourselves had often felt, might also be shared by others; and the very numerous expressions of interest and approval which we have received have shown that we were fully justified in our belief.

During its progress through the pages of the Journal, we have made numerous additions to the information given, and some corrections. The list of names has also been considerably extended, and has been brought down to the end of 1892. We have been encouraged to think that a reprint of the list, embodying these additions and corrections, would be convenient for those who find it somewhat difficult of consultation in its present form, and would also serve as a handy volume of reference for others specially interested in Botanical Biography.

The plan of the work, as readers of the 'Journal of Botany' will be aware, has been to be liberal in including all who have in any way contributed to the literature of the science, who have made scientific collections of plants, or who are known to have otherwise assisted in the progress of Botany, exclusive of pure Horticulture. Where known, the name is followed by the years of birth and death, and in other cases an approximate date is given. Then follows the place and day of birth and death, the place of burial, chief titles, dates of election to the Linnean and Royal Societies, or chief University degrees. In conclusion, reference is made to the chief sources of further information, in which Pulteney, Rees, Pritzel, Jackson, and the Royal Society's Catalogue are first quoted, and then the fullest known record, with a note of any portrait and of genera dedicated to the various persons catalogued, or, in the absence of genera, of species. Some estimate of the extent of the work may be gathered from the fact that in its serial form it comprised nearly 1700 names, and this number will be largely increased in the reprint.

The volume will be bound in cloth, and will be issued at 4*s.* (postage paid) per copy, *to subscribers whose names are received before publication*; the published price will be considerably higher. As only 500 copies will be printed, intending subscribers should send their names, with the amount of subscription, to Messrs. WEST, NEWMAN & Co., 54, Hatton Garden, London, E.C.

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BRITISH AND FOREIGN.

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South Kensington.

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He will be greatly obliged to the Secretaries of Local Natural History Societies if they will forward him copies of their Transactions, so that any paper of botanical interest may be recorded in this Journal.

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Production of Tubers inside a Potato.

R. Morgan lith. after Photo.

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PRODUCTION OF TUBERS WITHIN THE POTATO.

By A. B. Rendle, M.A., F.L.S.

(Plate 336.)

In the *Gardeners' Chronicle* of January 22nd, 1870, is a short note on the anomalous production of young tubers or shoots in the interior of a potato, resulting in the bursting of the rind and their protrusion through the clefts, when grown too large to be any longer contained within. There is also a rough figure, which is reproduced in the same journal of Nov. 29th, 1879, in connection with a short article on the subject called forth by some experiments of M. Lachaume who, in the *Revue Horticole*,* tells how he was able to bring about the phenomenon artificially. He placed potatoes in the spring on a table in a cellar, and every week removed any shoots which had appeared. On September 1st the skin split, and a few days after the little potatoes protruded.

No certain explanation of the origin of these internal shoots is given in any of the above notes, but the *Gardeners' Chronicle* suggests as the most probable one, the formation of adventitious buds within the tuber in connection with its vascular ring; these feed on the plant, grow and produce young tubers, which ultimately rupture the rind and so become exposed. Perforation of the tuber and inversion of the young shoots whose tips are thus thrust into the interior, where they develop new tubers, is cited as a less probable cause.

Having received from Mr. Carling, of Norwich, a specimen of a potato in the state in question, I thought it would be of interest to ascertain the real origin of these "intrasomatal" shoots. The tuber, while lying with others in a cellar, had sprouted, but the shoots had been broken off and nothing left of them but the damaged bases. In the course of the summer it was noticed that the rind was splitting in several places, the clefts increased in width, and soon little potatoes appeared through the apertures. This went on for some weeks, and when given to me the potato had the appearance shown in the plate (fig. A.), and was literally bringing forth young at several points. It was also rapidly wasting away, having to supply nourishment for its large family from its own tissues. By following the internal shoots through the substance of the tuber, it was seen that each was attached to the base of one or other of the damaged aërial shoots, and examination in longitudinal section showed the connection to be a very real one, and explained the anatomical origin. The internal shoot is produced at the base of the aërial shoot, and its vascular cylinder is connected at the narrow point of union with a small network of bundles, with which those passing down the adjacent side of the aërial shoot also anastomose (fig. C). The shoot is very narrow at its point of origin, but rapidly widens out, and begins at once to give off roots and

* *Revue Horticole*, 1879, p. 397.

branches, showing that life is going on with great activity. Another evidence of this vigour is seen in the great number of undeveloped buds and roots all round the base of the aërial shoot, which at once give the clue to the physiological cause of the phenomenon. What has happened is this. When the "eyes" or buds of the mother-potato sprouted, an active metabolism was set up in their immediate neighbourhood. The reserve-material, stored in the insoluble form of starch, was changed by the diastatic ferment into sugar, and thus becoming soluble and capable of easy transport, passed up into the growing shoot to supply material for formation of tissue and production of the energy necessary for growth. But this growth, which in the dark would be exceptionally vigorous, was suddenly stopped altogether by removal of the shoot. The chemical processes, however, still went on; and to find some channel for the use of the material produced, numbers of adventitious buds were formed round the bases of the shoots, one or more of which pushed through the substance of the tuber, giving rise on its course to numerous roots and branches. It is difficult to see what purpose the colourless thread-like roots can serve, as the entire nourishment is obtained through the attachment with the aërial shoot, the suberisation of the internal cavities as well as the surface of the young shoot and tubers precluding any idea of its assumption from outside. We must suppose that the habit of producing roots is so deeply graven on the constitution of tuber-bearing shoots that it continues even when roots are useless.

The branches either produce or themselves become young tubers in which the reserve-material of the old tuber is again stored in the form of starch. The new growth being entirely at the expense of the mother, naturally causes the latter to shrivel.

Mr. Carruthers has drawn my attention to a case somewhat parallel physiologically, where supply of soluble food-material goes on after the necessity for it has ceased as far as the plant is concerned. The Indians of Mexico have discovered and use it for their own convenience. They cut off the inflorescence of the *Agave* at the base, close to the thick, fleshy leaves, and scoop out the open wound into a sort of basin. Of course a large supply of soluble carbohydrate (sugar) was necessary for the very active metabolism and growth going on in the huge opening inflorescence. This supply does not cease with the removal of the stalk, and the sugary liquid wells up into the artificial basin, whence it is removed by the Indians and fermented to make a drink. This goes on until the plant has exhausted the large quantities of starch which it had stored in its leaves with a view to flowering and fruiting. It then withers and dies.

There is one other point worthy of mention as regards the relation between the two generations of tubers. In a paper entitled* "Ueber Vernarbung und Blattfall," Bretfeld cites a "remarkable example of an internal wound found in a kind of dry-rot of the potato, and induced through penetration by a parasite. The pene-

* Pringsheim's *Jahrbuch*, Bd. xii. p. 138,

tration starts at the eyes; those nearest the diseased spot decay, and thence, mostly without perceptible alteration on the exterior, the disease passes inwards and becomes localised in various parts of the tuber. Suitable sections show plainly that the area of infection is surrounded by cells actively engaged in formation of periderm." Similarly in our potato, the channels formed by the penetration of the shoots and the larger cavities in which are contained the young tubers, singly or often massed together in clusters, have their walls suberised, while the surface of the penetrating shoots and tubers is protected in the same way. This occurs not only where, through formation of a cleft, the interior becomes exposed, but right in the heart of the mother-tuber, which thus protects itself against the inroads of its own offspring, much in the same way as against a parasitic fungus. There is this difference between the protecting layer of the vigorously-growing young shoot and that of the old wasting tuber, where life must be at a much lower ebb. While the former, with its young tubers, gives rise to a phellogen producing layers of periderm, in the latter we find simply suberisation of the walls with more or less disappearance of the contents of the outer layers of cells.

It may be asked why the adventitious buds at their formation should not break out and grow freely in the air, rather than force their way through a resistent tissue. But we can understand that, dealing as we are here with shoots, which in the natural order of things have to push their way through the soil, the relations to the substratum will thus be more truly expressed, and the response to the external stimuli of contact and moisture better satisfied.

Description of Plate 336.—A. An old potato bringing forth young tubers through clefts in its skin. B. Lower part of the same specimen cut open and the upper part of the section removed, laying bare a large cavity containing several young tubers, of which the greater number are borne on a shoot whose origin at the base of an aërial shoot is indicated at x; x' is near the origin of another shoot. C. Longitudinal section of the origin of an intrasomatal shoot (a) at the base of an aërial shoot (b), showing the arrangement of the bundle system.

BRITISH HAWKWEEDS.

By Edward F. Linton, M.A., and Wm. R. Linton, M.A.

(Concluded from p. 182.)

Hieracium eustales, n. sp. A plant gathered in Glen Derry, S. Aberdeen, 1889, stood alone for some time, the material being too scanty to deal with. No name was even suggested. Dr. Lindeberg, to whom it was sent, observed on it, "Species pulchra, bene ut videtur distincta." In 1891 two gatherings were made in Mid-Perth, *viz.*, on Meall Ghaordie, on the Glen Lyon side, and on Meall-na-Saone, on rocky sides of the Allt Dubh Galair, of a plant which was eventually found to be practically identical with the Glen Derry form. The latter, probably from growing on granite,

has a blacker, more glandular involucre, and a more hairy upper surface of the leaf. The Derry plant grew on warm shingle under a southern exposure, a circumstance quite sufficient to account for the greater hairiness of the leaf. The Perthshire gatherings were made on the north side of the mountain, and therefore in all probability received less direct sunshine. In general habit this species bears some resemblance to *H. Farrense* F. J. Hanbury, from which the shape of the subentire leaves, the subsolitary stem-leaf, the senescent phyllaries, and the ciliate ligules distinguish it. There is an approach to *H. submurorum* Lindeb. in some respects, but the involucre alone requires that these two should be placed far apart. The description (drawn up by E. F. L.) is appended :—

H. eustales Linton. Stem 12–18 in., moderately hairy, floccose above, branching little, but at a very acute angle, usually bearing one stem-leaf, and sometimes a bract-like linear-lanceolate one high up as well. Leaves long-petioled, light green (becoming yellow-green when dried), moderately firm, narrowly ovate-oblong, acute ; blade narrowed equally to both ends, attenuated to the petiole, and narrowly decurrent ; thinly hairy below, chiefly on the nerves, softly ciliate with curled hairs, glabrescent on the upper surface (or hairy, as in the Aberdeenshire plant) ; margin slightly crenate and denticulate or subentire. Petiole thinly hairy, channelled, with midrib inclined to turn red. Stem-leaf petioled, similar to radical, denticulate ; petiole winged, almost $\frac{1}{2}$-amplexicaul. Heads few, moderate in size, on very floccose peduncles, which are usually straight, long, and moderately glandular, with a very few scattered simple hairs. Involucre ovate-obconic in flower, ovoid-conic after flowering, very floccose, clothed with numerous rather short black-based hairs and some very unequal glandular hairs. Phyllaries narrow, but becoming broader below as they mature, narrowly acuminate, markedly floccose-tipped, and with a white floccose margin. Ligules pilose at the tips. Style medium livid. Pappus very light brown.

H. orcadense W. R. Linton, n. sp. Basal leaves in a rosette, outer broad ovate, narrowed to the petiole, rounded and apiculate above, dentate or denticulate, inner lanceolate, nearly equally narrowed to apex and petiole, with a few medium-sized patent teeth ; margins ciliate with bulbous-based hairs ; surfaces with similar hairs, or partially denuded ; stem-leaves 1–4 at regular intervals, with short winged petioles, and acute teeth in the lower half ; stem 1–2 ft. high, floccose and with bulbous-based hairs, specially in the upper part, bearing a closely aggregated corymbose panicle of 2 to many heads ; peduncles floccose, with black-based hairs, and few setæ ; involucres small, dark, cylindric, slightly floccose, with many black-based hairs, and few or no setæ ; phyllaries few, broad, blunt, dark olive, pale-edged, white-tipped ; ligules medium yellow, tips glabrous ; styles dark livid. The corymb-like panicle of neat dark heads, and the somewhat leafy stem, are the more obvious distinguishing features of this plant. It was named *H. cæsium* Fr. by Dr. Boswell, and Fries' *Epicrisis* contains a remark under *H. cæsium* on a plant from "Orney," sent by Mr. Backhouse,

which probably refers to this. Dr. Lindeberg said of it, "Not known to me, not known in Scandinavia"; and on another occasion, "Species nova inter vulgata." Mr. Backhouse, in a letter to Mr. Hanbury, said, "Unless an extreme form of *vulgatum*, which I suspect, it is apparently a new species." It grows extensively on Quoys Hamars, Hoy, Orkney Isles, 200–300 ft. above sea-level. The name is due to a suggestion by Mr. Hanbury. For position, on account of the number of stem-leaves, we incline to place this plant between *H. eustales* and *H. Farrense*, the group being already pointed out by Dr. Boswell and Dr. Lindeberg.

H. Farrense F. J. Hanbury. Wood S. of Braemar, *S. Aberdeen; we have also specimens from the R. Clunie, Braemar, which are no doubt this species. Clova Valley, 1½ miles below the Hotel, *Forfar; specimen confirmed by Mr. F. J. Hanbury.

H. silvaticum (L.) Almq., subsp. *subulatidens* Dahlst. (*Hier. Exs.* Fasc. iv. No. 61). Glen Doll, Forfar. Entered here under *H. silvaticum*, as so described; though it must be borne in mind that this name with Almquist signifies what we understand by *H. murorum* L. The correspondence between Dahlstedt's specimens and ours is so complete that we do not hesitate to report this interesting form. The leaves, which are ovate-acuminate, are singularly dentate, with large spreading deltoid-acuminate teeth, sometimes equalling half the breadth of the blade. Stem wiry, flexuous, floccose, sparingly hairy, with one stem-leaf or 0. Radical leaves forming a rosette, thinly hairy, ciliate with white silky hairs. Panicle subcorymbose, with ascending branches. Heads numerous, rather small; peduncles densely glandular and floccose; flowers deep yellow. Involucre ovoid, floccose and glandular; phyllaries narrow, inner acutely acuminate, glandular almost to the tip. Ligules with a few scattered deciduous hairs about the tip. Style livid. Pappus pure white. This description is drawn from Dahlstedt's specimens; our plant, however, agrees well with it.

H. vulgatum Fr., var. *sciaphilum* Uechtr. (*H. sciaphilum* Uechtr.). A form of large size, with very glandular heads and peduncles, and in this differing greatly from ordinary *H. vulgatum*, has been met with in Somerset, at Cheddar; Stroud, in West Gloucestershire; at Sellack, Herefordshire (by Rev. A. Ley, as *H. orarium*); in Glyn Neath, Glamorgan; in Carnarvonshire, on the Great Orme's Head, and in other localities; in Dovedale, Derbyshire; and also near Alstonfield (by the Rev. W. H. Purchas); which would appear in all likelihood to be the limestone form of the very glandular plant from Shirley, Brailsford, and Yeldersley, S. Derbyshire, which M. Arvet-Touvet determined in 1891 as coming under the var. *sciaphilum*. The question whether our limestone *vulgatum* form is this variety perhaps requires further proof; but we draw attention to the plant, and to its distribution, under this as its possible name.

H. diaphanum Fr. We understand that Mr. Hanbury, in writing the note at the foot of p. 131 in this Journal (1892), was referring to a series of plants gathered by one of us at Longridge in 1891, which certainly had a good deal of the aspect of an *H. vulgatum* f. He had, however, previously assented to a Longridge plant, gathered

by one of us in 1874, as identical with Mr. Melvill's Prestwich *H. diaphanum* Fr. Both stations happen to be within short range of a large manufacturing town; and it is a question whether this plant may not after all be a state of *H. vulgatum*, the floccose clothing of which has been denuded by a smoky climate. Rubi, *e. g.*, in the neighbourhood of Manchester, have been observed to be much more glabrous than they usually are in a purer atmosphere.

H. diaphanoides Lindeb. Tal-y-Llyn, *Montgomery, H. T. Mennell, sent through the Watson B. E. C. as *H. orarium*. Festiniog, Merioneth. Near the Resolven Fall, and on Craig-y-Llyn, Glamorgan.

H. diaphanoides Lindeb., var. *apiculatum*, Linton, n. var. A plant was noticed on the Unich Water above Loch Lee, Forfar, in 1889, which was sent after a time through Mr. Hanbury to Dr. Lindeberg, but failed to receive a name. Cultivation has, however, brought out (what we had a suspicion of before) a clear affinity with *H. diaphanoides*. The wild specimens bear much resemblance to *H. zetlandicum* Beeby, differing chiefly in the leaves; and, in fact, the var. *apiculatum* is a connecting link between these two species. It differs from *H. diaphanoides*, the leaves of which are of a dull, often cæsious green, in having fresh green leaves, more cuneate at the base, and more blunt and apiculate, the upper part of the leaf having a sugar-loaf outline with an apiculate point, whereas the leaf of *diaphanoides* is triangular acute. The heads of the variety are in a laxer more irregular subcorymbose panicle, and the phyllaries are *broad* acuminate *obtuse*, compared with those of the type, which are moderately broad, linear-acuminate, and *acute*. Var. *apiculatum* usually has the upper surface of the root-leaves covered with bulbous-based hairs. On the whole, it has the look of a somewhat refined alpine or northern variety of *H. diaphanoides*.

H. sparsifolium Lindeb. Sent us unnamed by Lieut.-Col. Rimington, from R. Creed, Stornoway, Lewis, *Outer Hebrides. Here we place a plant gathered in various valley localities near Fortingal, in one place five miles up Glen Lyon, where the plant grew on light soil on turf, and taken for *H. sparsifolium*; in others, among loose rubble or in richer soil, taken for *H. norvegicum* Fr., var. *confertum* Lindeb., a plant for which, by Mr. Hanbury's directions, we were searching. This latter form has leaves rather crowded towards the base, and the plants were luxuriant and many-flowered. It was not long before we perceived that these two plants were identical. We also learnt later on that the more luxuriant plant was the same as that which Mr. W. F. Miller had previously gathered at this station in 1888, and which Dr. Lindeberg had named *H. norvegicum* Fr. var. *confertum* for Mr. Hanbury (see *Journ. Bot.* 1892, p. 131). We have already mentioned in this Journal (1892, 147) our finding *H. sparsifolium* five miles up Glen Lyon. We now feel obliged to express our conviction that the more luxuriant river-side plant about Fortingal and Culdamore is also this species, and not a *H. norvegicum* form. The involucres have not the floccose and hairy clothing ("*albo-floccosa*, pilis eglandulosis albidis undique hirta"), nor the dentation of the leaves, that Fries

describes, and that Lindeberg's specimens (*Hi. Scand. Exs.* 141–145) show; the root-leaves, too, of our specimens are rather numerous and persistent, whereas *H. norvegicum* should have no persistent root-leaves; and the plant grown in the garden (at Shirley) shows no other differences from *H. sparsifolium* grown side by side in the same soil, than a greater profusion of leaves in the lower part of the stem, and the leaves more decidedly dentate. The last of Lindeberg's varieties (No. 145) shows a considerable approach to the Fortingal plant, and also to *H. sparsifolium*, having the persistent root-leaves which good soil maintains in this species. It may be added that *H. sparsifolium* stands between *H. gothicum* and *H. norvegicum* in some respects, and was known to Fries as *H. gothicum* var. *pseudo-norvegicum*.

H. Friesii Hn. (*H. gothicum* Fries, Backh.) Berriedale cliffs, *Caithness.

H. Friesii Hn., var. *basifolium* Lindeb. Clova Valley, *Forfar. Glen Lyon, *Mid-Perth, not far from Fortingal. Mr. Hanbury has mentioned in this Journal (1892, p. 132) our Clova gathering of this marked variety, and Dr. Lindeberg's thorough approval of our naming of the plant; but he unites with it plants gathered by Mr. Miller, Mr. A. Somerville, and himself, which after examination we consider are not all good for var. *basifolium;* and remarks that after five years' cultivation of this form it tends to revert to the type. We think that this observation does scant justice to Lindeberg's variety. Dr. Lindeberg observed on a second Clova sheet we sent through Mr. Hanbury, labelled as above, "Recte! Rectius credo esse hanc formam a ceteris formis H. Friesii segregare. Peculiarem semper induit habitum, quo ab omnibus aliis formis e longinquo differt." Though we have missed cultivating this, and at first thought with Mr. Hanbury that it was but a slight variety, we hold now with Dr. Lindeberg that it has distinctive characters. Our Clova plant has a strong rosette of 4–8 ovate-oblong to ovate-acuminate root-leaves, and the stem-leaves *at once* tailing off in point of size, and few in number, *e. g.*, not more than three stem-leaves in the lowest 6–8 in. of stem. Mr. Miller's and Mr. Somerville's specimens referred to above are chiefly *gothicum* type, two only out of six approaching var. *basifolium*. One of Mr. Hanbury's specimens, from Braemar, also approaches our Clova plant, but in it stem-leaves are frequent near the root, and do not at once tail off in size. While the plant Mr. Hanbury has in cultivation, and which seemed to show tendency to revert to the type, is still further from the variety; the original specimen from the root has no true root-leaf attached to it, and five large approximate leaves in the lowest part of the stem; it has, moreover, been to Lindeberg without any suggestion of its being var. *basifolium* having been made by him. We have stated the matter thus fully to show that this variety of Lindeberg's is still free from the charge of reverting to type in cultivation.

H. Friesii Hn., var. *latifolium* Backh. Assuming Backhouse's variety to be the broad-leaved Clova form (which we have had in cultivation since 1887, and which is considered by Mr. Hanbury rightly

named), we can report this from *Skye, in the neighbourhood of Uig, with the type; and from Mid-Perth, near Fortingal, where it was scarce. In both these the style is pure yellow, a point insisted on by Backhouse in his description. The Berriedale plant above referred to (under *H. Friesii*) is broad-leaved, but has a livid style. It is a noticeable fact, however, that Backhouse's description of var. *latifolium* fits almost exactly (except in the colour of the style) a plant we detected in 1889, and then came to consider the true var. *latifolium*. This after cultivation (at Shirley) we have shown to be nothing less than—

H. scoticum F. J. Hanbury, a most interesting extension of the species southward, and addition to *Forfar. The locality was the same Backhouse gives for his plant, *viz.*, "Heathy hillocks near the Kirktown of Clova." Can our plant, which is "more robust, but comparatively shorter when of equal vigour," with "stem purplish red" to a remarkable degree, and "stem-leaves large, broad, distant," and phyllaries with markedly "pale margins," be the plant which Backhouse had in view? Such a confusion seems not at all impossible between two plants which are so very closely allied. At the same time it must be admitted that good *gothicum latifolium* has been gathered (*viz.*, by Mr. Hanbury, at Melvich, accepted by the late Mr. Backhouse) in the very district where *H. scoticum* is most prevalent.

We would mention at this point that in 1890 we made careful search through Hareheadwood, near Selkirk, for the purpose of seeing if *H. juranum* Fr. could be found there. As a result of our search, we are fairly satisfied that it does not grow in the wood now.

H. strictum Fr. Vaternish Cliffs, and cliff S. of Uig, *Skye; scarce.

H. strictum Fr., var. *subcrocatum* Linton, n. var. Growing on rocks in the bottom of the gorge below the Grey Mare's Tail; also up the Spoon Burn; near Moffat, Dumfriesshire. By the R. Yarrow, near Selkirk, Selkirkshire. This we believed to be *H. strictum* Fr. at first, but could get only a qualified assent to our view. Dr. Lindeberg remarked on it, "H. strictum quoad herbam, H. crocatum quoad capitula." It differs from the type in the total absence of any hair or pubescence from the upper part of the ligules, in the shorter peduncles, in the comparative absence of glands and floccose down from the involucres, and in the broader ovate-acuminate leaves. The plant will probably be found to be widely spread in the S. of Scotland and the N. of England. We have it collected under the name of "*H. crocatum* Fr." by the Rev. H. E. Fox, from the R. Rothay, Grasmere, Westmorland. It is very probable that a plant gathered near Bethesda, Carnarvonshire, by one of us in bud, in 1890, is also this plant, evidence having been obtained later of the style being very dark, a usual feature in both type and variety.

H. crocatum Fr., var. *angustatum* Fr. (*H. angustum* Lindeb.). Braemar, S. Aberdeen.

H. reticulatum Lindeb. (*H. crocatum* Fr., var. *reticulatum* Lindeb.). We identify specimens we gathered in former years by

the R. Clunie, Braemar, *S. Aberdeen, with this species. Also a plant by the Naver, Bettyhill, *W. Sutherland, very fine and typical, collected by us in 1888; and by the R. Creed, Stornoway, *Outer Hebrides, gathered and sent unnamed by Col. J. W. Rimington.

H. boreale Fr., var. *virgultorum* (Jord.). Wallis Down, Dorset. Named for us by M. Arvet-Touvet. This variety has a clean-cut look, having all the stem-leaves subsimilar, ovate-lanceolate to ovate-acuminate, coriaceous, subglabrous on the upper surface; stem rather thinly hairy; phyllaries drying a dark olive-green.

H. boreale Fr., var. *Hervieri* Arv.-Touvet (Hervier, *Hier. Eas. Soc. Dauph.* ii. 376). Lytchett Minster; and Verwood; Dorset. M. Arvet-Touvet says that this is exactly his var. *Hervieri*; the plant from Lytchett was sent him. It has a more shaggy stem; leaves gradually passing from lanceolate to ovate-acuminate; upper ones subglabrous above; involucres drying a dull greenish-black.

H. umbellatum var. *coronopifolium* Fr. Wallis Down, and Lytchett Minster, Dorset (specimens of these were sent to M. Arvet-Touvet labelled by one of us as this variety, and confirmed by him, the Wallis Down form of the plant emphatically); also near Queen's Wood, Horton, in the same county; between Mere and Mere Down, Wilts; near Blackslough, Somerset. A form from Sandhills, near Witley, Surrey, collected in company with the Rev. E. S. Marshall, comes near *coronopifolium*, and may perhaps best be placed under it. The variety as represented in this country has a close panicle, with rigid erect or suberect peduncles. The leaves, however, are the main character, by Fries' description.

A striking variety of *H. umbellatum* has been collected by Mr. J. E. Griffith, of Bangor, at two stations on the Carnarvonshire coast, about fifteen miles apart, *viz.*, Abersoch and Morfa Bychan, which reminds one of var. *monticola* Jordan, but seems to be so far unnamed. As this plant is always dwarf in stature, 8–16 in. high, and remarkably short in the leaves, not often exceeding 2 in. in length, it is proposed to call it *H. umbellatum* L., var. *curtum* Linton. It differs besides in the neat few-flowered panicles of rather large flowers, rather short peduncles somewhat spreading, broad obtuse outer phyllaries much reflexed at the tip, only those on the peduncle becoming narrow; the leaves have two or three denticulations or small teeth on each side, the upper ones being often entire or nearly so. The style is pure yellow in the Abersoch plant, livid yellow at Morfa Bychan. Another plant from Carnarvonshire, gathered near Tregarth in 1890 by one of us, perhaps ought to find its place under *H. umbellatum* as a variety, but is so much off in the direction of the *gothicum* group that it may deserve specific rank. In cultivation it maintains its peculiarities; it stands over at present for further consideration.

The following variety was accidentally omitted from its proper place in this list, the order of which has been very carefully considered, in consultation with Mr. Hanbury, and it is added here at the end of our paper:—

H. stenolepis Lindeb., var. *anguinum* W. R. Linton. Basal leaves

erect or erect-patent, forming a rosette, ovate-oblong; leaves and petioles subglabrous, with slight marginal fringe. Petioles and stem commonly suffused with red; peduncles and bases of involucres floccose and setose; phyllaries with short black hairs and setæ, long, forming a pencil-point in bud. The snake-like look of the heads in bud suggested the name. In this feature and in general facies this plant is very distinct from *H. stenolepis*, but at present seems best retained as a variety under it. It grows in the higher parts of the hills about Moffat, Dumfriesshire.

A PROVISIONAL LIST OF THE MARINE ALGÆ OF THE CAPE OF GOOD HOPE.

By Ethel S. Barton.

(Concluded from p. 177.)

Corallineæ.

Melobesia membranacea Lam. Cape, *Harvey*.
Geogr. Distr. Atlantic. W. Indies. Mediterranean. Australia.

M. amplexifrons Harv. Port Natal, *Gueinzius*.
Geogr. Distr. W. Indies.

M. pustulata Lam. Natal Bay, *Krauss*, sub nomine *M. verrucata*, Lam.

Geogr. Distr. Mauritius. Atlantic. Australia! W. Indies. Pacific. Mediterranean.

M. corticiformis Kütz. On *Gelidium cartilagineum*; Robben Island, *Boodle*! Sea Point, *Boodle*! Port Alfred, *Slavin*! Cape, *Harvey*.

Geogr. Distr. Shores of Britain. Mediterranean.

M. (Mastophora) stelligera Endl. et Dies. Port Natal, *Pöppig*.

Lithophyllum lichenoides Phil. Algoa Bay, *Ecklon*.
Geogr. Distr. Atlantic. S. Pacific. Mediterranean.

L. Patena Rosan. = Melobesia Patena Hook. et Harv. On *Gelidium cartilagineum*; Cape Agulhas *Hohenack.*! No. 237. Algoa Bay, *Hb. Dickie*!

Geogr. Distr. Australia. New Zealand.

L. capense Rosan. Cape Agulhas, *Hohenack.*! No. 236.

Lithothamnion Brassica-florida Aresch. Algoa Bay, *Bowerbank*.

L. polymorphum Aresch. Algoa Bay, *Bowerbank*.
Geogr. Distr. General.

Mastophora hypoleuca Harv. Port Natal, *Gueinzius*.

M. Lamourouxii Decne. Port Natal, *Gueinzius*! *Krauss*.
Geogr. Distr. N. Pacific. Indian Ocean. Australia. W. Indies.

Amphiroa anceps Dcne. Cape, *fide Kützing*.
Geogr. Distr. Mauritius. Australia. Norfolk Island. W. Indies.

A. FIRMA Kütz. Cape, *fide Kützing*. Areschoug quotes this as "Vix Amphiroæ species."

A. MULTIFIDA Kütz. Cape, *Lappe*.

A. CAPENSIS Aresch. Table Bay, *fide Areschoug*. Cape Agulhas, *Hohenack.*! No. 243. The Hohenacker specimen in the British Museum is very fragmentary, and I am inclined to doubt the correctness of the naming.

A. HETEROCLADIA Kütz. Natal, *Gueinzius*. This is probably a species of *Cheilosporum*.

A. BOWERBANKII Harv. Port Elizabeth, *Spencer*! Algoa Bay, *Bowerbank*! Port Natal, *Gueinzius*. Cape, *Hohenack.*!

A. CONTRACTA Kütz. Cape, *Lappe*.

A. INVOLUTA Kütz. Cape, *Lappe*!

A. DUBIA Kütz. Cape, *Lappe*.
Geogr. Distr. W. Indies.

A. EXILIS Harv. Kalk Bay, *Boodle*! Algoa Bay, *Bowerbank*. Cape, *Hb. Dickie*!

Var. CRASSIUSCULA. Cape, *Darwin*.
Geogr. Distr. Atlantic (Brazil). Mediterranean.

A. LAMOUROUXIANA Decne. (= CHEILOSPORUM sp.). Cape, *Capt. Carmichael in Hb. Lamouroux*.

A. DILATATA Lam. Port Elizabeth, *Spencer*! Natal, *Gueinzius, Krauss*. Cape, *Bowerbank*!
Geogr. Distr. West Australia. West Indies.

A. EPHEDRACEA Decne. Kalk Bay, *Boodle*! Cape Agulhas, *Hohenack.*! Nos. 242, 243. Knysna, *Boodle*! Cape Recife, *Craven*! Algoa Bay, *Bowerbank*! Port Elizabeth, *Spencer*! Kei Mouth, *Flanagan*! Natal, *Krauss*! *Pöppig*.
Geogr. Distr. Australia.

CHEILOSPORUM CULTRATUM Aresch. Kalk Bay, *E. Young*! *Boodle*! Knysna, *Boodle*! Algoa Bay, *Bowerbank*. Port Natal, *Gueinzius*.
Geogr. Distr. Atlantic (Brazil).

C. STANGERI Aresch. Port Natal, *Gueinzius*.

C. SAGITTATUM Aresch. Algoa Bay, *Bowerbank*. Natal, *Krauss*.
Geogr. Distr. Australia.

C. FLABELLATUM Aresch. Port Natal, *Gueinzius*.

ARTHROCARDIA PALMATA Aresch. Table Bay, *Krauss*.

Var. —— J. Ag. Cape Agulhas, *Hohenack.*! No. 241.
Geogr. Distr. Shores of Brazil.

A. CORYMBOSA Aresch. Table Bay, *Krauss*. Algoa Bay, *Bowerbank*, sub nomine *Amphiroa corymbosa* Lam.
Geogr. Distr. Shores of America, *fide Lamarck*.

A. CAPENSIS Aresch. Bay of Natal, *Hb. Areschoug*.

JANIA RACEMOSA Kütz. Cape, *fide Kützing*.

J. RUBENS Lam. Natal, *Gueinzius*. — Var. AFRICANA Krauss. Natal, *Krauss*.
Geogr. Distr. General.

J. FASTIGIATA Harv. Algoa Bay, *Bowerbank*. Cape, *Hb. Dickie*!
Geogr. Distr. Australia.

J. INTERMEDIA Kütz. Cape, *Hohenack.*! No. 589.

J. NATALENSIS Harv. Robben Island, *Boodle*! Port Natal, *Gueinzius.*

Geogr. Distr. Australia.

J. ADHÆRENS Lam. Natal, *Krauss.*
Geogr. Distr. Mediterranean?

CORALLINA LORICATA Kütz. Cape, *fide Kützing.*

C. BIFURCA Kütz. Cape, *fide Kützing.* According to the plate, this is hardly a species of *Corallina.*

C. FLABELLATA Kütz. (= ARTHROCARDIA?). Knysna, *Boodle*! Cape, *Hohenack.*! Nos. 586, 587.

Geogr. Distr. Mauritius.

C. CUVIERI Lamour. Port Natal?, *Gueinzius.*
Geogr. Distr. Australia. Tasmania. West Indies.

C. GOMPHONEMACEA Kütz. Cape, *Zeyher.*

C. ANCEPS Kütz. Cape, *fide Kützing.*

C. CARINATA Kütz. Cape, *Lappe.*
Geogr. Distr. Warm Atlantic.

C. ROSEA Aresch. Table Bay, *Krauss.*
Geogr. Distr. Australia.

C. PILULIFERA Post. et Rupr. Cape Agulhas, *Hohenack.*! No. 588. The specimen of this number in the British Museum Herbarium is so fragmentary that I must quote it on Hohenacker's authority only.

C. OFFICINALIS Linn. Table Bay, Natal Bay, *Krauss.* Cape, *Hb. Trin. Coll. Dubl.* Agardh doubts the authenticity of all specimens of this plant from the Cape. I have never seen any, and can therefore only quote these records.
Geogr. Distr. Arctic Sea. North Atlantic. W. Indies. Mediterranean. Black Sea.

ADDENDA.

PROTOPHYCEÆ.

MASTIGOCOLEUS TESTARUM Lagerh. Kalk Bay, *A. Batters.*

PHÆOPHYCEÆ.

CARPOMITRA CHYTRAPHORA Kütz. British Kaffraria, *Flanagan*! Cape, *Hb. Dickie*!
Geogr. Distr. Australia.

FLORIDEÆ.

Aristothamnion Tysoni, n. sp. Frons nana, ½ poll. alt., erectiuscula, alterne pinnatim decomposita sursum longe corticata, ramis pinnatis, non divaricatis, apice corymboso-subglomeratis, ramellis longis in apicem multo tenuiorem cito acuminatis, basi

sæpe attenuatis, sphærosporis inter ramellos corymbosos plurimis subaxillaribus.

Hab. Ad. Prom. b. Spei. In speciminibus *Gigartinæ Radulæ* J. Ag. a W. Tyson com.

I have named this species after Mr. W. Tyson, of Cape Town, who has sent me many interesting specimens of algæ from the Cape of Good Hope.

THYSANOCLADIA CORIACEA Harv. Natal, *Ruperti* !
Geogr. Distr. Western Australia.

The Cape of Good Hope has always been a favourite field for botanists since the days when it proved a convenient halting-place for travellers to the East. Most of them naturally directed their attention to the land flora, and until the early part of this century there are not many records of algæ from this region. The earliest preserved alga from the Cape is a specimen of *Amphiroa*, which is too much broken to determine the species; it was collected by Dr. Herman in 1672, and is preserved in the British Museum.

The next collector appears to have been John Staremburgh, who at some date prior to 1703 sent some dried algæ to Petiver, and these are also preserved in the British Museum, where I have seen specimens of *Macrocystis pyrifera* J. Ag. described by Petiver as "Alga verrucosa capensis," of an *Iridæa*, and of an alga which is probably *Pachymenia carnosa* J. Ag.

After these pre-Linnean collectors we have Drege, Krauss, Gueinzius, Ecklon, Zeyher and others, whose herbaria have unfortunately been broken up and distributed, thus adding much to the difficulty of determining the presence or absence of certain species at the Cape.

In later times we have collections made by Harvey, containing a large proportion of the total number of species recorded from the Cape; and by Pappe, on whose specimens Kützing founded many of his Cape species. A large collection of algæ was made in 1889–90 by Mr. Leonard Boodle, and presented to the British Museum; and specimens preserved in spirit were also presented by Mr. Scott Elliot, all of which have been incorporated in this list. An unnamed collection of *Corallineæ* from the Cape still remains in the British Museum Herbarium, collected by Bowerbank, Mr. Boodle, and others; there are also unnamed specimens of *Chætomorpha* and *Cladophora*, but I prefer to leave the determination of these species to some expert in these difficult genera. At the present time the British Museum is receiving occasional supplies of material forwarded by Mr. Tyson, of Cape Town, collected by himself and other workers at different points along the coast. This list is therefore intended to show what has been already done as an aid to present collectors, and does not aim at being an exhaustive catalogue of the Cape marine flora.

The first, and indeed up to the present time the only, list of exclusively Cape algæ is the *Phyceæ Capenses* of Areschoug,

published in 1851, which is based principally on the Krauss and Drege collections. The other records of algæ from these shores are scattered promiscuously through books of travel and lists of forms from the Southern Hemisphere, ranging from Petiver's writings at the beginning of last century up to the present day. The latest published find, and certainly one of much interest from the point of view of distribution, is that by Dr. Schinz of a *Laminaria* in Walfisch Bay. This will be referred to later.

As regards the classification, I have followed the arrangement of Professor Agardh in his *Species, Genera, & Ordines Algarum*, in preference to any other, both in the *Phæophyceæ* and the *Florideæ*, with the one exception of *Asperococcus*, which I have included in *Sporochnaceæ*. The *Chlorophyceæ* are arranged according to De Toni's *Sylloge Algarum*, vol. i. I am aware that in many respects it would have been better to adopt a classification more in accordance with modern research; but I have not taken this course because of the difficulties it would have presented in tabulating and comparing the Cape marine flora with other floras, and destroyed the chief interest —that of geographical distribution—of such lists as the present. The small number of the *Protophyceæ* represented at the Cape is entirely due to their small size, which has caused them to be overlooked.

The limits of the region here examined cannot be defined as south of any special degree of latitude, since the different temperature of the two sides of the promontory are so marked. On the east there is a strong warm current flowing southward from the Indian Ocean, bringing with it the tropical and subtropical forms to Natal, and even to Cape Agulhas; while another branch of the same current flows direct from Mauritius, where the algæ are, as would be expected, very similar to those at the Cape, though the two places are in such different latitudes. On the west coast, however, we find a different state of affairs. There is a cold current which comes up from the south, bringing icebergs as far north as 35° 50′, and this has naturally a marked effect on the algæ all up this coast. Indeed, as has been mentioned above, the genus *Laminaria* is recorded from Walfisch Bay, within the tropics, the only place in the world, so far I know, where this is known to occur. It is necessary, therefore, to include all algæ found south of 22° on the west coast of South Africa, and although there are not many records from this district as yet, I hope to receive supplies shortly from Port Nolloth, which will probably furnish interesting results.

It may be remarked here that in the British Museum Herbarium there is a specimen of *Halosaccion ramentaceum* J. Ag., collected at the Cape by Chavin, and as this is essentially a cold-water form, its presence at the Cape can only be accounted for by this cold current from the south. The presence of the two species of *Fucus*, *F. serratus* L. and *F. vesiculosus* L., recorded by Ecklon, also bears out this fact. No locality is given, and one would therefore suppose that these forms grow on the west coast in the full sweep

of the current from the south. It will be interesting to see, when this west coast flora is more carefully explored, how many more cold forms occur.

I have drawn up a careful comparison of the marine floras of Australia, Western Australia, and Kerguelen Land with that of the Cape of Good Hope, and in some points the results are interesting and instructive. As would be expected, the number of genera common to the two regions is very high, for out of 141 genera existing at the Cape, 113 of these are represented in Australia; while out of the 429 species at the Cape, and the 1198 in Australia, only 95 are common to the two regions. I expected that, by isolating from the Australian flora those genera and species which occur on the western coast of Australia, I should find a larger proportion of species common to this coast and the Cape. This is, however, not the case, and I can only account for it by the fact that many species occur in Western Australia which have not yet been recorded from there, but which are found and recorded from Port Philip, Geelong, and well-worked localities on the south coast. It is interesting to note that many species at the Cape are recorded *only* from there and from Australia; though they may possibly occur also in the Indian Ocean, a point which must be decided on the publication of Mr. Murray's list of Indian Ocean Algæ. He has kindly allowed me to reproduce here his tables of distribution published in the *Phycological Memoirs*, part ii., showing a comparison of the marine floras of the Atlantic and Indian Oceans with that of the Cape of Good Hope. In his paper (*l. c.*) he has dealt fully with the subject, which therefore needs no further remark.

Comparison of the Cape flora with that of Tristan d'Acunha shows that the latter has only three species which do not also occur at the Cape, and, of these, two are known only from there. The islands of Kerguelen, Marion, and Heard, which lie out of the reach of all direct communication with the Cape, show a large proportion of genera and a very few species in common. The number of genera and species recorded from the two latter islands is very small, that from Marion Island amounting only to 9 species, each representing a genus; while from Heard Island only 7 genera and 8 species are recorded—3 of *Phæophyceæ* and 4 of *Florideæ*. The number of genera common to the Cape and Marion Island is 6, and the number of species 2. Heard Island and the Cape have 6 genera and 1 species in common. The small size of the flora, and the difference in latitude between these islands and the Cape, make it unnecessary to draw up a table of comparison between these two regions.

There are some species common to the West Indies and the Cape, but these are not many; and as they are included in Mr. Murray's comparison between the floras of the Cape and the warm Atlantic, I have not considered a special comparison with the West Indies necessary. Prof. Schmitz, of Greifswald, has most kindly sent me for inspection a collection of Cape algæ, made by Mr. Spielhaus

at Cape Town, unfortunately too late to incorporate in the present list; I have, however, found no algæ among them but those hitherto recorded from this place.

Since publishing the beginning of this list, I have made a re-examination of two species recorded in it, i.e., *Padina Pavonia* Gaill. and *Pleonosporium Borreri* Näg. The former is a bad specimen of *Zonaria lobata* Ag., and the latter is *Halothamnion Harveyanum* J. Ag., the type specimen of which has been kindly lent me by Dr. Perceval Wright. The resemblance is great between this plant and *Pleonosporium Borreri*. These errors would make it necessary to subtract two genera and two species from the Cape total, but for the fact that in place of *Padina* I have added to the brown algæ *Carpomitra chytraphora* Kütz., and in place of *Pleonosporium*, among the *Floridеæ*, there is *Thysanocladia coriacea* Harv. The numbers of both genera and species in the Cape table remain therefore unaltered. *Aristothamnion Tysoni* has not been included.

In conclusion, I wish to express my thanks to the officials of the Botanical Department of the British Museum for their interest and help; to Prof. Schmitz and Mr. Batters for naming and comparing several critical species; and to Dr. Perceval Wright, who has most kindly sent me many type specimens from the Harvey Herbarium for comparison with algæ in the British Museum.

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ALGÆ.	TOTALS						ALGÆ COMMON TO							
	Warm Atlantic		Cape of Good Hope		Indian Ocean		Warm Atlantic and Cape		Indian Ocean and Cape		Warm Atlantic and Indian Ocean		Warm Atlantic, Indian Ocean, and Cape	
	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.
FLORIDEÆ.														
Ceramieæ	6	47	11	33	7	21	4	7	8	7	5	10	5	5
Cryptonemiaceæ ..	9	30	6	11	5	16	3	1	3	2	5	4	3	1
Gigartineæ	10	28	7	42	6	18	7	8	6	8	6	6	6	4
Spyridieæ	1	6	1	4	1	3	1	2	1	2	1	3	1	2
Dumontiaceæ.....	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Areschougieæ.....	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Champieæ	2	7	1	2	2	7	1	0	1	1	2	3	1	0
Rhodymeniaceæ ..	6	22	7	18	5	10	4	2	4	2	3	2	2	1
Squamarieæ	2	3	1	4	1	2	1	1	1	0	1	0	1	0
Hildenbrandtiaceæ .	0	0	1	1	0	0	1	0	0	0	0	0	0	0
Porphyraceæ	2	6	2	6	2	6	2	2	2	1	2	1	2	0
Sphærococcoideæ ..	4	63	7	13	6	22	1	2	2	2	2	7	1	2
Delesserieæ	3	8	6	17	2	3	2	2	1	0	2	1	1	0
Helminthocladiaceæ	6	41	3	5	6	24	3	4	2	0	4	10	2	0
Chætangieæ	2	2	2	4	2	2	1	1	2	1	1	1	1	1
Gelidieæ	5	17	5	13	2	12	3	5	2	5	2	3	2	3
Hypneaceæ	2	22	2	8	2	12	2	4	1	2	1	9	1	2
Solieriеæ.....	4	12	4	5	3	6	3	2	3	1	2	2	2	1
Wrangelieæ	1	2	1	1	1	1	1	0	1	0	0	0	1	0
Chondrieæ	2	25	2	15	2	16	1	8	1	6	2	8	1	5
Lomentarieæ	1	1	1	1	1	2	1	0	1	0	1	0	0	0
Rhodomeleæ	14	96	15	43	18	48	9	7	10	3	12	12	8	1
Corallineæ	7	43	9	48	6	24	7	16	6	10	5	12	5	6
Total..	90	482	95	295	80	255	58	73	58	53	59	94	46	34
PHÆOPHYCEÆ.														
Fucaceæ	4	38	7	21	4	59	4	7	3	8	3	10	3	4
Dictyotaceæ	7	45	4	21	7	23	4	9	4	5	4	9	4	5
Splachnidiaceæ	0	0	1	1	0	0	0	0	0	0	0	0	0	0
Ectocarpaceæ	1	15	1	5	2	12	1	2	1	1	1	2	1	1
Sphacelariaceæ	2	4	3	6	1	5	1	1	1	2	1	1	1	1
Chordariaceæ.....	6	9	4	6	5	7	2	2	3	3	3	2	2	2
Punctariaceæ.....	1	1	1	2	1	1	0	0	1	1	0	0	0	0
Arthrocladiaceæ ..	1	3	0	0	1	2	0	0	0	0	1	2	0	0
Sporochnaceæ	3	9	1	4	2	7	1	2	1	1	2	3	1	1
Laminarieæ	0	0	5	9	0	0	0	0	0	0	0	0	0	0
Ralfsieæ	1	1	1	1	1	1	1	0	1	0	1	0	1	0
Total..	26	125	28	76	24	117	14	23	15	21	16	29	13	14
CHLOROPHYCEÆ.														
Siphoneæ	23	99	7	20	16	72	6	7	6	7	16	29	6	6
Conferveæ	4	80	3	23	8	39	3	5	3	3	4	13	3	2
Ulveæ	5	20	4	11	2	10	2	6	2	5	2	4	2	3
Total..	32	199	14	54	26	121	11	18	11	15	22	46	11	11
PROTOPHYCEÆ	14	51	4	4	9	21	2	0	2	0	5	4	2	0
AGGREGATE	162	859	141	429	139	514	85	114	86	89	103	173	72	59

	Cape of Good Hope		Australia		Western Australia only		Kerguelen Land		ALGÆ COMMON TO							
									Australia & Cape of Good Hope		W. Australia and Cape		Kerguelen Land and Cape		W. Australia & Kerguelen Land	
	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.	Gen.	Spec.
PHÆOPHYCEÆ.																
Fucaceæ	7	21	19	113	14	50	1	2	5	4	5	3	0	0	0	0
Splachnidiaceæ	1	1	1	1	0	0	0	0	1	1	0	0	0	0	0	0
Dictyotaceæ	4	21	10	45	5	16	1	1	4	4	4	3	0	0	0	0
Ectocarpaceæ	1	5	2	5	1	1	2	2	1	1	1	1	1	0	1	0
Sphacelariaceæ	3	6	3	10	3	4	1	2	2	3	1	1	1	0	1	0
Chordariaceæ	4	6	9	14	1	1	0	0	4	2	1	0	0	0	0	0
Punctariaceæ	1	2	2	3	0	0	2	5	1	1	0	0	1	0	0	0
Sporochnaceæ	1	4	8	23	5	9	1	1	1	1	1	1	1	1	1	1
Laminariaceæ	5	9	4	7	1	1	3	3	2	1	1	1	2	1	1	1
Arthrocardiaceæ	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Ralfsiaceæ	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	28	76	59	222	30	82	11	16	21	18	14	10	6	2	4	2
FLORIDEÆ.																
Ceramieæ	11	33	13	118	11	55	4	8	6	6	6	4	3	2	4	3
Cryptonemiaceæ	6	11	11	44	7	16	1	1	6	1	4	1	0	0	0	0
Gigartineæ	7	42	11	49	4	6	6	8	6	1	4	0	6	4	3	0
Dudresnayeæ	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0
Dumontiaceæ	1	1	2	2	0	0	0	0	1	0	0	0	0	0	0	0
Spyridieæ	1	4	1	9	1	5	0	0	1	0	0	0	0	0	0	0
Areschougieæ	0	0	3	20	3	10	0	0	1	2	1	0	0	0	0	0
Champieæ	1	2	4	21	3	6	0	0	1	1	1	1	0	0	0	0
Rhodymeniaceæ	7	18	12	64	6	29	4	5	6	5	4	5	3	1	3	0
Squamarieæ	1	4	3	7	3	5	0	0	1	0	1	0	0	0	0	0
Hildenbrandtieæ	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sphærococcoideæ	7	13	14	44	10	21	0	0	6	2	4	2	0	0	0	0
Delesserieæ	6	17	4	39	3	7	2	7	3	3	3	1	2	0	2	0
Helminthocladiaceæ	3	5	9	23	6	13	0	0	3	3	2	2	0	0	0	0
Chætangieæ	2	4	5	7	3	3	1	1	2	1	1	1	1	0	0	0
Gelidieæ	5	13	4	10	3	4	0	0	4	5	3	2	0	0	0	0
Hypneaceæ	2	8	7	32	4	14	0	0	2	3	2	3	0	0	0	0
Solieriieæ	4	5	6	20	3	6	0	0	0	0	0	0	0	0	0	0
Lomentarieæ	1	1	1	2	1	1	0	0	0	0	0	0	0	0	0	0
Wrangelieæ	1	1	3	26	3	13	0	0	0	0	0	0	0	0	0	0
Chondrieæ	2	15	8	41	5	21	2	2	2	8	2	4	1	0	1	1
Rhodomeleæ	15	43	29	211	25	90	4	6	13	7	12	5	4	0	3	0
Corallineæ	9	48	9	45	7	21	1	4	9	14	7	4	1	1	1	0
Porphyraceæ	2	6	2	4	1	2	1	2	2	2	1	2	1	2	1	2
Total	95	295	162	840	113	351	26	44	79	65	62	38	22	10	18	6
CHLOROPHYCEÆ.																
Siphonocladaceæ	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Siphoneæ	7	20	20	83	8	24	2	3	6	5	4	2	2	2	2	2
Ulveæ	4	11	3	15	2	3	3	5	2	5	2	3	2	3	2	2
Conferveæ	3	23	3	23	1	4	3	7	3	2	1	0	3	3	1	0
Total.	14	54	27	122	11	31	8	15	11	12	7	5	7	8	5	4
PROTOPHYCEÆ	4	4	9	14	2	3	3	3	2	0	1	0	2	0	1	0
AGGREGATE	141	429	257	1198	156	467	48	78	113	95	84	53	37	20	28	12

REMINISCENCES OF ALPHONSE DECANDOLLE.

By C. Baron Clarke, F.R.S.

You have asked me to supply some personal reminiscences of M. Alphonse DeCandolle. I willingly send you all that I can call to mind; but the dates are only approximate, and there are doubtless other inaccuracies due to imperfection of memory.

I only made the acquaintance of M. Alphonse DeCandolle in (or about) 1878, when I went to his house (the old family house in the Cathedral Square, Geneva) to do some botanic work in his herbarium, which occupies the top floor of that house, where it may still (by the permission of M. Casimir DeCandolle) be consulted by all botanists. Up to the point where the *Prodromus* was (virtually) grounded on this herbarium, the *Prodromus Herbarium* is kept separate, so that, using the *Prodromus* as an index, it is easy to find immediately the exact material on which any species in the *Prodromus* rests, and from which the description is drawn. The remaining (much larger) portion of the herbarium is arranged as a general herbarium—the natural orders in the DeCandollean sequence.

Nothing could exceed the kind attention which M. Alphonse DeCandolle paid me on my first entering his herbarium—I need hardly add, also on subsequent visits. He was always ready to hunt up any troublesome reference—to place the bundles of plants in good order in my hands—and asked, "Now, is there any way in which I can assist you in this work?" After a week's work in June, he insisted (the weather being very fine) on my taking a botanic ramble in the neighbourhood of Geneva, and sent the curator of his herbarium to take me to the Southern Jura above Nantua. It was certainly botany made easy; the curator led me before a bed of wild flowers, and explained, "It was on this very bed that M. Auguste DeCandolle founded such a species."

At the earliest date I saw him, M. Alphonse DeCandolle was past 70 years of age, but very vigorous and young-looking for his years, and getting through a large quantity of literary botanic work and correspondence; and in a letter which he wrote me only a very few weeks before his death, he told me that he retained his health, nearly unimpaired, till about six months before his death, when he became weak.

As regards all the events of his life up to his seventieth year, I can only give you imperfect recollections of what he told me in conversations. Were my memory good, I ought to be able to furnish a fairly complete biography thereout.

There was but one DeCandolle family, at the time of the Reformation, settled on their estate in France. Out of a numerous family of sons, three (placed in a monastery) became Protestants, and travelled in Eastern France advocating the principles of the Reformation. One of the three was killed in a riot raised against them, and the other two then settled at Geneva. One of these two proved a successful man, and built the family house in the Cathedral

Square, but left no descendants; from the other brother the great botanists are sprung.

Not many years ago a French teacher in England (whose real name was not aristocratic) published his teaching books under the name of DeCandolle. M. Alphonse DeCandolle immediately instructed a London solicitor to take proceedings against the man who thus stole his name; and received from the solicitor the opinion of an eminent counsel that there was in England no way of touching the French teacher. M. Alphonse DeCandolle was prejudiced in favour of everything English—even an English dinner—but he told me that in this matter of allowing one man to trade upon another man's name he thought the English law defective.

M. Alphonse DeCandolle came to England, for a long summer season, some year before 1830, and made a general tour of the island. He travelled first from London to Devonshire, then up the West of England, visiting Wales and the English Lakes, and was entertained by Sir W. J. Hooker, then professor at Glasgow. He had to travel by coach or by post; but he proceeded north from Glasgow, did Skye on foot, crossed to Inverness, and thence (stopping at Edinburgh, York, &c.) to London. This was a most unusual and enterprising tour for any person to take at that period.

Some of the earlier volumes of the DeCandolle *Prodromus* were prepared at the "Petits Pierres," a house about a mile and a half from Geneva on the north shore of the lake. M. Alphonse DeCandolle recollected that the *Melastomaceæ* material was so limited that they managed to have it all spread out at once. When Alphonse DeCandolle (with his father) lived at this house, he used in his morning bath to swim across the lake and touch the north shore and return. He possessed doubtless great personal strength all his life, as any one would readily admit who had seen him, when past 80 years of age, disport himself on the lake in a heavy row-boat by way of exercise.

M. Alphonse DeCandolle was justly proud of his father (Grand Cross of the Legion of Honour) and of his sons; he was most aristocratic-looking. I have met few men who to so great dignity of manner united so great kindness and consideration for others.

SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from p. 76.)

γ. Flores racemosi.

43. Abutilon racemosum Schlecht. in Linnæa, xi. p. 367. *Sida racemiflora* Steud. Nom. ii. p. 579.

Hab. Mexico, nr. Tlalpuyahua.

♪. Flores axillares.

* Species latissime distributæ.

44. A. CRISPUM Medic. Malv. p. 29 (1787) (*cryspum*); Sweet, Hort. Brit. i. p. 53. *A. albescens* Miq. Pl. Jungh. p. 285. *A. petiolare* Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 205. *A. sessilifolium* Presl, Reliq. Haenk. ii. p. 113. *Sida crispa* L.; DC. Prod. i. p. 469. *S. amplexicaulis* Lam. Dict. i. p. 7. *S. filiformis* Jacq. Obs. Bot. ii. p. 23. *S. sessilis* Vell. Fl. Flum. vii. t. 27. *S. lasiostegia* Link, Enum. Hort. Berol. ii. p. 205. *S. sessiliflora* Dietr. Synop. ii. p. 856. *Bastardia crispa* St. Hil. Fl. Bras. Mer. i. p. 194. *B. nemoralis* St. Hil. *l. c.* p. 195, t. xxxix.

Hab. Tropical and Subtropical Regions.

Var. IMBERBE Griseb. Fl. Brit. West Indies, p. 80. *A. trichodum* A. Rich. Fl. Cub. i. p. 55. *A. imberbe* Don, Gen. Syst. i. p. 502. *Sida imberbis* DC. Prod. i. p. 469. *S. trichoda* Dietr. Synop. iv. p. 856.

Hab. Florida. West Indies!

Sida sessiliflora Bot. Mag. t. 2857, is quoted by Dr. Schumann among the synonyms of this plant. I have not seen the fruit.

45. A. GRAVEOLENS W. & A. Prod. i. p. 56; Comp. Bot. Mag. i. t. 2. *Sida graveolens* Roxb. Hort. Beng. p. 50. *A. furfurellum* Miq. Fl. Ind. Bat. vol. i. pt. ii. p. 144, ex descr.

Hab. India! Malaya! New Caledonia! Isle of Pines! Australia! Beluchistan! Tropical Africa!

Var. HIRTUM Masters in Fl. Brit. Ind. p. 327. *A. indicum* var. *hirtum* Griseb. Fl. Brit. West Indies, p. 78. *A. heterotrichum* Hochst. in Herb. *A. Kotschyi* Hochst. in Webb Frag. Fl. Æth. p. 52. *Sida hirta* Lam.; DC. Prod. i. p. 470. *S. pilosa* L'Herit. Stirp. p. 130.

Hab. India! Trop. Africa! West Indies! Central America! Cuba! Florida! Peru!

46. A. INDICUM Sweet, Hort. Brit. i. p. 54. *A. elongatum* Moench, Meth. Supp. p. 205. *A. asiaticum* W. & A. Prod. i. p. 56. *A. grandiflorum* Don, Gen. Syst. i. p. 504. *A. aureum* Don in Sweet, Hort. Brit. iii. p. 80. *A. vesicarium* Sweet, *l. c.* *A. leiospermum* Griseb. Fl. Brit. West Indies, p. 79. *A. cysticarpum* Hance, Pl. Nov. Austr. Chin. Diag. p. 10. *Sida indica* L.; DC. Prod. i. 471. *S. vesicaria* Cav.; DC. *l. c.* *S. pubescens* Cav.; DC. *l. c.* *S. orbiculata* DC. *l. c.* *S. aurea* Lodd. Bot. Cab. t. 1842. *S. Doniana* Dietr. Syn. iv. p. 857.

Hab. Tropical and Subtropical Regions.

Var. ALBIDUM. *A. albidum* Webb et Bert. Phyt. Canar. p. 39, t. 2. *Sida canariensis* Broussonet in herb. *S. albida* Willd.; DC. Prod. i. p. 471.

Hab. Canary Is.!

Var. WELWITSCHII. Suffrutex basi lignosus cinereus, foliis cordato-ovatis irregulariter serratis, floribus axillaribus solitariis magnis, calyce externe cinereo interne albo-cinereo-velutino, petalis intense aurantiacis, carpellis ignotis.

Hab. Angola. Cavalheiros, *Welwitsch*, No. 4944!

Stem 4–5 ft. high; leaves 1–1¾ in. long, 1 in. to nearly 1½ in. broad; petals ½ in. long.

This plant is closely allied to *A. grandiflorum* Don, *l. c.*

Var. POPULIFOLIUM W. & A. Prod. i. p. 56. *A. populifolium* Sweet, Hort. Brit. i. p. 53. *Sida populifolia* Lam.; DC. Prod. i. p. 470. *S. Beloere* L'Herit. Stirp. i. p. 130. *S. Eteromischos* Cav.; DC. Prod. i. p. 470.

Hab. India! Malaya.

47. A. FRUTICOSUM Guill. & Perr. Fl. Seneg. i. p. 73. *A. microphyllum* A. Rich. Fl. Abyss. i. p. 70, t. 15. *A. denticulatum* Webb, Frag. Fl. Æth. p. 51. *Sida gracilis* R. Br. in Salt It. *S. amoena* Wall. Cat. 1848. *S. Perrottetiana* Dietr. Synop. iv. p. 855.

Hab. India! Trop. Africa! Socotra! Arabia! Palestine! Java!

48. A. MUTICUM Webb, Frag. Fl. Æth. p. 51. *A. tomentosum* W. & A. Prod. i. p. 56. *A. glaucum* Webb in Hook. Niger Flora, p. 109. *A. pannosum* Webb, Frag. Fl. Æth. p. 52. *Sida glauca* Cav.; DC. Prod. i. p. 471. *S. hirta* Wall. Cat. 1852, B partly. *S. villosa* Wall. Cat. 1856, C. *S. asiatica* Wall. Cat. 1852, D. *S. mutica* Delile Fl. Ægypt. p. 60, n. 45. *S. tomentosa* Roxb. Hort. Beng. p. 50. *S. pannosa* R. Br. in Salt It. *S. polycarpa* Chr. Sm. ex Walp. Ann. Bot. ii. p. 158.

Hab. India! Ceylon! Afghanistan. Tropical Africa! Egypt! Palestine! Arabia! Comoro Is.! Cape Verd Is.! Queensland!

Var. PARVIFOLIA. *Sida rugosa* R. Br. in herb. Caule stricto virgato, foliis parvis cordato-ovatis serratis, pedunculis strictis versus apicem articulatis, carpellis angulatis villosissimis.

Hab. Australia. Keppel Bay, *R. Brown*, No. 5117!

The leaves of this plant are small (1–1½ in. in length); the carpels are angled, and thickly covered with white hairs.

49. A. ASIATICUM Don, Gen. Syst. i. p. 503. *A. hirsutissimum* Moench, Meth. Supp. p. 205. *A. albidum* Hook. & Arn. Bot. Beechey, p. 278. *Sida asiatica* L.; DC. Prod. i. p. 470. *S. Hookeri* Dietr. Synop. iv. p. 856.

Hab. Tropics.

50. A. THEOPHRASTI Medic. Malv. p. 28 (1787). *A. pubescens* Moench. Meth. p. 620. *A. Avicennæ* Gaertn. Fruct. ii. p. 251, t. 135; Reich. Ic. Flor. Germ. t. clxvi. *A. Behrianum* F. Muell. in Trans. Phil. Soc. Vict. 1855, p. 13. *Sida Abutilon* L.; DC. Prod. i. p. 470. *S. Avicennæ* Dietr. Synop. iv. p. 854. *S. coronata* Scop. Del. Insub. iii. p. 1. *S. tiliæfolia* Fisch.; DC. Prod. i. p. 470.

Hab. Europe. Mediterranean Region! China! Australia! Naturalized in many parts of Asia, Africa, and N. America.

* * Boreali- vel Centrali-Americana, Mexicana, Cubana, et Ind. occid.

51. A. JACQUINI G. Don, Gen. Syst. i. p. 503. *A. crassifolium* G. Don, *l. c.* *A. hypoleucum* A. Gray, Pl. Wright. i. p. 20. *A. lignosum* A. Rich. Fl. Cub. i. p. 152. *A. domingense* Turcz. Bull. Soc. Nat. Mosc. 1858, p. 205. *A. paraffine* Shutt. ex Chap. Fl. U. S.

p. 56. *S. crassifolia* L'Herit. Stirp. t. 60. *S. Jacquini* Dietr. Synop. iv. p. 854.

Hab. Mexico! Yucatan! West Indies! Cuba! Florida!

52. A. LIGNOSUM G. Don, Gen. Syst. i. p. 501. *A. abutiloides* Garcke in Engler's Jahrbuch, 1893, p. 485. *Sida lignosa* Cav.; DC. Prod. i. p. 469. *S. abutiloides* Jacq. Obs. t. 7. *Lavatera americana* L.; DC. Prod. i. p. 470.

Hab. Mexico! West Indies!

The description of *Sida americana* L. (*A. americanum* Sweet) in Sp. Plantarum, ed. 2, p. 963, would do very well for the above; but the figures in Plum. Ic. i. t. 2, and the later one in Descourtilz, Fl. Antil. t. 406, are certainly not this plant.

53. A. PERMOLLIS Sweet, Hort. Brit. i. p. 53. *Sida permollis* Willd.; DC. Prod. i. p. 471.

Hab. West Indies. Cuba, *Wright*, No. 1571! Bahamas! Florida!

Sida cornuta Willd. (*A. cornutum* Don) must be closely allied to this plant.

54. A. PARISHII S. Wats. in Proc. Am. Acad. xx. p. 357.

Hab. Arizona!

55. A. WRIGHTII A. Gray, Pl. Wright. p. 20.

Hab. New Mexico, *Wright*, No. 876! Texas!

56. A. CALIFORNICUM Benth. Bot. of Sulph. p. 8.

Hab. California!

57. A. BERLANDIERI A. Gray ex S. Wats. in Proc. Am. Acad. xx. p. 358.

Hab. Mexico, *Berlandier*, Nos. 1550, 3050, 3108.

Var. DENTATUM A. Gray in Proc. Am. Acad. xxii. p. 301.

Hab. Mexico. Chihuahua, *Pringle*, No. 306!

58. A. LEMMONI S. Wats. in Proc. Am. Acad. xx. p. 357.

Hab. Mexico. Arizona! California.

59. A. SCABRUM S. Wats. in Proc. Am. Acad. xxiv. p. 41.

Hab. Mexico, nr. Guaymas, *Palmer*, Nos. 662! 97!

60. A. DUGESII S. Wats. in Proc. Am. Acad. xxi. p. 447.

Hab. Mexico, nr. Guanajuato, *Berlandier*, No. 1330!

61. A. THURBERI A. Gray in Pl. Thurb. p. 307.

Hab. Mexico. Sonora!

Allied to *A. ramosum* Guill. & Perr.

62. A. PARVULUM A. Gray in Pl. Wright. p. 21.

Hab. Texas! Colorado.

Allied to *A. incanum* Sweet.

63. A. ELLIPTICUM Schl. in Linnæa, xi. p. 368.

Hab. Mexico.

The flowers of this plant are corymbose above.

*** Australi-Americana rarissime Mexicana vel Ind. occidentalia.

+ Caulis procumbens.

64. A. GLECHOMATIFOLIUM St. Hil. Fl. Bras. Mer. i. p. 198, t. 41; K. Schum. *l. c.* p. 381. *Sida glechomatifolia* Dietr. Synop. iv. p. 852.

Hab. Uruguay. Argentine Republic !

+ Caules erecti vel suberecti.

65. A. NEOVIDENSE K. Schum. *l. c.* p. 386.

Hab. Brazil.

According to Dr. Garcke (in Engler's Bot. Jahr. 1893, p. 485), this may have to be considered a form of *A. anodoides* St. Hil. & Naud. in Ann. Sc. Nat. Ser. 2, xviii. p. 49.

66. A. INTEGERRIMUM Turcz. in Bull. Soc. Nat. Mosc. 1858, p. 204. *A. aurantiacum* Lind. Cat. Hort. 1848, p. 44. *A. planiflorum* C. Koch & Bouché in Berl. Allgem. Gartenzeit. 1857, p. 97. *Sida integerrima* Hook. Bot. Mag. t. 4360.

Hab. New Granada, *Linden*, No. 1508 ! Venezuela, *Funcke*, No. 753 !

67. A. GOUDOTIANUM Triana & Planch. Fl. Nov. Granat. p. 184.

Hab. New Granada !

68. A. MINARUM K. Schum. *l. c.* p. 389.

Hab. Brazil. Prov. Minas Geraes.

69. A. INSIGNE Planch. in Van Houtte's Fl. de Serres, v. p. 11, t. 551; Bot. Mag. t. 4840. *A. igneum* Hort. ex Nichols. Gard. Dict. i. p. 4.

Hab. New Granada.

70. A. TIUBÆ K. Schum. *l. c.* p. 382.

Hab. Brazil.

Allied to *A. crispum* Medic.

71. A. INÆQUILATERUM St. Hil. Fl. Bras. Mer. i. p. 198, t. 40.

Hab. Brazil.

72. A. MONOSPERMUM K. Schum. *l. c.* p. 396.

Hab. Brazil. Prov. Bahia, *Glaziou*, No. 2389.

73. A. VIRGATUM Sweet, Hort. Brit. ed. 1, p. 53; K. Schum. *l. c.* p. 390. *Sida virgata* Cav.; DC. Prod. i. p. 469.

Hab. Central America. Mexico. Peru.

Var. TOMENTOSA K. Schum. *l. c.* *A. cinereum*, *paranthemum*, *paranthemoides*, et *mendozinum* Gris. Symb. ad Flor. Arg. p. 45.

Hab. Brazil ! Argentine Republic. Bolivia.

74. A. REFLEXUM Sweet, Hort. Brit. i. p. 53. *Sida reflexa* Cav.; DC. Prod. i. p. 469. *S. retrorsa* L'Herit. Stirp. i. t. 64.

Hab. Ecuador ! Columbia ! Peru !

** Africana, Mauritiana, et Mascarensia.

75. A. MAURITIANUM Medic. Malv. p. 28. *Sida mauritiana* Jacq. Ic. Pl. Rar. t. 137.

Hab. Mauritius. Comoro Is. !

76. A. ZANZIBARICUM Masters in Fl. Trop. Afr. i. p. 186. *Sida zanzibarica* Boj. in herb.

Hab. Tropical Africa!

77. A. MACROPODUM Guill. & Perr. i. p. 64, t. 14.

Hab. Senegal!

78. A. EXSTIPULARE Don, Gen. Syst. i. p. 500. *Sida exstipularis* Cav.; DC. Prod. i. p. 471.

Hab. Bourbon, *Thouin*, No. 586!

There is a specimen of this plant in Hb. Smith at the Linnean Society. The leaves are very acuminate, and cinereo-pubescent underneath.

79. **A. Rehmanni,** n. sp. *A. indicum* var. *populifolium* J. Szysyl. Enum. Polypet. Pl. Rehmann. p. 128. Caule fruticoso molliter cinereo-velutino, foliis longe petiolatis cordatis lanceolatis cinereo-velutinis grosse serratis, floribus axillaribus solitariis pedunculis teretibus supra medio articulatis, sepalis ovatis acutis vel subacuminatis, carpellis breviter aristatis externe pubescentibus 3-spermis seminibus nigrescentibus.

Hab. Transvaal, *Dr. Rehmann*, No. 5221! On the Maadji Mountain, *W. J. Burchell*, No. 2372!

Larger leaves about 3 in. long and 2 in. broad; petioles 1–2½ in.! carpels ⅜ in. long.

(To be continued.)

SHORT NOTES.

PHEGOPTERIS CALCAREA IN OXFORDSHIRE.—Wychwood Forest, in the north-west of the county, was the only published locality for the above plant in my *Flora*, but a locality in Buckinghamshire near Wycombe was on record. This year Miss Bell, daughter of the Vicar of Pyrton, found in one of the Chiltern woods a plant which is, I believe, to be referred to the limestone polypody. The same district yields the oak fern, which occurs in two localities, one in Bucks, the other in Oxon, both of which localities have been published in this Journal. Just as the oak fern from these places is not quite typical, so this limestone polypody is not absolutely identical with the Cheddar plant; but the situation is probably due to the Oxford and Bucks plant growing in shadier situations, while the drier soil in which the oak fern grows in Oxon and Bucks may tend to increase its resemblance to the limestone polypody. — G. CLARIDGE DRUCE.

ROSA DONIANA IN W. KENT.—On May 23rd Captain Wolley Dod and I found several fine bushes of this plant near Halling; and I also met with one specimen at the foot of the downs above Trottescliffe a few days later. *R. involuta* is not recorded for W. Kent in *Topographical Botany*, but was published in 1855 by Mr. A. G. More, in the *Phytologist* (new series), i. 24, as occurring at Southborough. Mr. F. Dickinson has also found a form (probably *Doniana*) near Crockham Hill.—EDWARD S. MARSHALL.

Helianthemum vulgare in Ireland.—I had the pleasure of discovering this species on the limestone between Donegal and Ballyshannon a few days ago. It has been once or twice before recorded as an Irish plant, but in mistake for *H. canum* or *H. guttatum*. I may also mention the discovery of *Myosotis collina* and *Eleocharis acicularis*, new for the County Donegal. New localities for several rare species, such as *Lastræa Thelypteris*, *Draba incana*, and *Cornus sanguinea*, were noticed. I have several very interesting forms, chiefly sedges, which I defer reporting upon at present, until they have been submitted to specialists. As I hope very soon to produce my *Flora of Donegal*, it is unnecessary to enter into more detailed notice of localities.—H. Chichester Hart.

Utricularia intermedia flowering.—The occurrence of this plant in a flowering state is so unusual that I think it worth mentioning that more than a hundred plants have been seen by me in bloom on Morden Decoy, Dorset, during late May or early June. This may be due to the extraordinary season, and, if so, is likely to occur in other localities; while the prolonged drought renders its natural habitat more accessible than in average years.—Edward F. Linton.

Bedfordshire Rubi (p. 81).—It appears, from information communicated to me by Mr. James Saunders, that *R. Lindleianus*, *R. rhamnifolius*, *R. rusticanus* (under the name *R. discolor*), *R. Radula*, and *R. dumetorum*, which I gave as new to Bedfordshire in the March number of this Journal, have been published previously in one way or another. I have to add the true *R. rudis* Weihe to the county list, found by me near Turvey; though this might seem to be a repetition, for "*R. rudis* Weihe" Bab. *prius* (which is equivalent to *R. echinatus* Lindl.) has already appeared in print, as Mr. Saunders tells me.—Edward F. Linton.

Middlesex Plants.—A few days ago I found *Littorella lacustris* growing abundantly on the margin of Ruislip Reservoir. *Lathræa Squamaria* I have gathered for some years past annually in a plantation close to Jack's Lock, near Harefield, and in the lane leading to Springwell Farm; and *Brachypodium pinnatum* on the waste heath-land on Duck's Hill, between Ruislip and Northwood. The authors of the *Flora of Middlesex* state that the last record for *Littorella* was by Sir Joseph Banks in 1805, and for *Lastræa* by Blackstone about 1737. The *Brachypodium* is probably a new record for the county.—J. Benbow.

Monstrosity of Orobanche caryophyllacea.—In June, 1876, I gathered, among many specimens of *O. caryophyllacea*, one that, until some time after, was not noted as unusual; and so the opportunity for examining it in a fresh state was lost. But last autumn, in looking over the genus in my herbarium, this specimen seemed of so much interest that I sent some flowers to Dr. Günther Beck, the monographer of the genus. The rarity of the occurrence seems a sufficient excuse for publishing his note on it. In his letter respecting it he kindly sent a drawing, and made the following remarks:—"The two flowers were, I regret to say, not intact, one

malformed (or was it one flower only?). The corolla appears from the fragments to have been normal. The pistil is joined to the stamens by a large cylinder, which has on the inside the pubescence of the stamens (in the upper part glandular hairs, in the lower part (simple) hairs. The calyx consists of four parts); their filaments are wanting. The anthers are in part normally constricted, and show but few pollen-cells, whilst others are crippled. The lips appear to be depressed. The extremities of the flowers are partially crippled; one flower showed a normal ovary formed of two lobes, whilst the other is three-lobed and ridged, and thus has six placentas. These are my observations on the fragments which you sent me, all of which I return. I also add my sketch. It being a monstrosity, the species cannot be determined with certainty, but I think I may take it for granted that it was *O. caryophyllacea*. I must, however, mention that I have never observed a monstrosity of this kind in any species of *Orobanche*." I have little doubt Dr. Beck is correct in referring it to Smith's species. I have vainly sought since for others in the same spot, *i. e.*, between Dover and Folkestone, Kent.—ARTHUR BENNETT.

THLASPI ALPESTRE b. OCCITANUM (Jord.).--We came across this var. last summer in two localities in Westmoreland (a county not mentioned for it in *Top. Bot.*): near Moor House, Teesdale, and on hills above Brough. In the latter locality *Hieracium pallidum* c. *crinigerum* Fr. grew close by. An additional station (see Baker's *Flora of Lake District*) for *Carex filiformis* L. in Westmoreland is Rydal Water. Mr. Arthur Bennett has seen the *Thlaspi*, and Mr. E. F. Linton kindly named the *Hieracium*.--E. S. & C. E. SALMON.

NOTICES OF BOOKS.

Missouri Botanic Garden. Fourth Annual Report. St. Louis, Mo.: published by the Board of Trustees. 1893. 8vo, pp. 226, tt. 23.

PROF. TRELEASE issues these handsome volumes with great promptness and regularity, and they always contain matter of botanical interest. The greater part of the present volume is occupied by Prof. Hitchcock's list of the plants collected in the Bahamas, Jamaica, and Grand Cayman, during an expedition undertaken during the winter of 1890–91, on behalf of the Missouri Garden. The number of species determined is 953, exclusive of varieties and cultivated plants. Two new species—*Pavonia bahamensis* and *Eragrostis bahamensis*—are described and figured, and two others—*Anastraphia pauciflosculosa* Wright and *Euphorbia Blodgettii* Engelm.—have hitherto existed only as MS. names. Prof. Hitchcock prefaces his enumeration with a dissertation upon nomenclature, on which, did space allow, we should like to make a few remarks. He has taken 1753 (the date of the first edition of

Species Plantarum) as "the starting point for genera and species," but the name on which our eye first fell was *Xylon*, which was applied by Linnæus in *Gen. Plant.* (1737) to the plant usually known as *Eriodendron anfractuosum*. In 1753 Linnæus called this *Bombax pentandrum*, and it is not easy to see why, on his own principles, Prof. Hitchcock has restored *Xylon*. The laudable announcement that "in this catalogue the original spelling" is used must be qualified by the deference exacted by the printer, who gives us "*Helecteres*," although Linnæus wrote *Helicteres*.

Prof. Trelease continues his "Studies of Yuccas and their pollination," and his paper is illustrated by nineteen excellent plates. Dr. E. L. Sturtevant, whose studies on the history of cultivated plants are well known, has "donated" to the Garden his extensive collection of specimens, figures, MSS., &c., of the genus *Capsicum*, "on condition that the genus should be studied with reference to an ultimate monograph of wild and cultivated forms," and has also enriched the Garden with his very extensive botanical library.

A reference to our previous notices of the Missouri Reports (*Journ. Bot.* 1892, 32, 283) will show that these volumes are of interest, not only from a scientific standpoint, but as evidences of that humour which we are in the habit of associating with America. The after-dinner speeches which adorn the annual banquets established by Mr. Shaw are this year reported less fully than on previous occasions, but that of Prof. J. D. Butler is given at length, and we cannot resist the temptation to give one or two extracts. According to this gentleman, "who had known the founder of the Garden for many years," Mr. Shaw's claim to immortality is established not by his Garden or any of its adjuncts, but by the festal gathering referred to. "This banquet," said Prof. Butler, "insures to Mr. Shaw perpetual memory. So long as men have stomachs, he who fills them without money and without price will never be forgotten. A daily dole of bread and beer at Winchester has made Bishop Blois of precious memory there for eight hundred years. It has drawn me to that city more than once. It has drawn the Prince of Wales. All comers share the same gratuitous cheer; few forget the giver of their horn and crust. Mr. Shaw's school days were near this hospitality. I believe that he tasted it, and so learned how to build himself a live-long monument." Mr. Shaw's school days, as a matter of fact, were spent at Mill Hill, which is not quite as close to Winchester as Prof. Butler seems to think.

During one of Prof. Butler's "manifold sojourns" with Mr. Shaw, they visited "his own mausoleum." "I there first saw his statue recumbent on the lid of the sarcophagus, but the sarcophagus itself was uncovered. As we stood there I told him that in the heart of the pyramid I had lain down in Pharaoh's coffin, and as I had had the last enjoyment of Pharaoh's tomb, so, with his permission, I would be the first to make proof of his,—and I did. He wished I could lie there in his place for ever." Did he foresee this speech?

Tropical Agriculture. By A. H. Alford Nicholls, M.D., F.L.S., &c. Macmillan & Co. 1892. 6s.

The Food of Plants. By A. P. Laurie. Macmillan & Co. 1s.

The first book is the result of a premium offered by the Jamaica Government for the best treatise on the art of agriculture as practised in the West Indies. While agriculturists at home have their text-books—more or less trustworthy—the large number of English-speaking colonists, who are engaged in cultivating the soil in the tropics under conditions very different from those in their native country, have had up to the present time no manual for their guidance: and the present volume admirably supplies the deficiency.

On glancing over the pages, Dr. Alford Nicholls's book attracts the reader by its general get up, by the clearness of its type, and excellence of its woodcuts. The first part consists of an introduction to agriculture, and deals with plant-life from its physiological point of view. While not confusing the lay reader with many technical terms, the author deals with his subject in a remarkably full manner, continuing with soils, manures, and closing with the physiology of the practical methods used by the farmer, tillage operations, pruning, grafting, &c. All these subjects are discussed without those inaccuracies into which the effort to use popular language sometimes leads scientific men.

The latter half of the volume is devoted to the more detailed consideration of the most important crops grown in tropical countries, with useful information about the habits of the plants, and the most economic methods of successful cultivation.

Throughout the book the illustrations are excellent, and make the clear and exact text still clearer, so that the agriculturists—or planters, as they are more commonly called in tropical countries—will have no difficulty in understanding both the theoretical and practical portions. Many Englishmen in the tropics will be grateful to Dr. Nicholls for the way in which he conveys information of a strictly scientific character in an eminently readable form, while keeping well to the fore the motto under which his prize essay originally appeared, "Respice finem."

Mr. Laurie's little book, which contains only 63 small pages and a short appendix, cannot be said to be too abstruse, and while striving to be extremely simple and elementary, it is indeed possible to go too far; and the first chapters of this little volume give one the impression that words of two syllables should have been used. It seems hardly necessary for a student of agricultural chemistry to make the experiment of cutting off the root of a plant and observing that it will wither and die (see Experiment I.).

The book consists of a series of experiments with the deductions to be drawn from each, and the writer certainly has been successful in explaining the elements of physiology in very plain and simple language. The illustrations are helpful, and the large print is pleasant to read. The chief fault of the book lies in its brevity, but as the author intends it to be used simultaneously with agricultural text-books, perhaps this is of not so much consequence.

As an elementary introduction to physiological botany, Mr. Laurie's book will no doubt be of use in the science classes of our public schools, but its limitations prevent its being of much service to more mature readers.

J. B. C.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 23). — M. Fischer, 'Zur Entwickelungsgeschichte des *Kryptosporium leptostromiforme*.' — (No. 24). R. Sernander, 'Ueber das Vorkommen von Steinflechten an altem Holz.' — (Nos. 25, 26). O. Kuntze, 'Die Bewegung in der botanischen Nomenclatur von Ende 1891 bis Mai 1893.'

Bot. Gazette (May 16). — G. F. Atkinson, 'Contribution to the biology of the Organism causing Leguminous Tubercles' (4 plates). — M. B. Thomas, 'The genus *Corallorhiza*' (2 plates). — W. N. Canby & J. N. Rose, Memoir of George Vasey (portrait and bibliography).—L. F. Ward, 'Frost freaks of the Dittany' (1 plate). —W. C. Sturgis, *Comatricha cæspitosa*, sp. n., & *Physarum sulphureum* (1 plate).

Bot. Magazine (Tokio). — (Ap. 10). R. Yatabe, *Asparagus Tamaboki*, sp. n. — (May 10). K. Okamura, 'Contributions to the Phycology of Japan' (*Grateloupia horrida*, sp. n.). — T. Makino, 'Notes on Japanese Plants' (*Astilbe simplicifolia*, sp. n.).

Bot. Zeitung (June 19). — J. Wortmann, 'Mittheilungfülier die Verwendung von concentrirtem Most für Pilzculturen.'

Bull. Bot. Soc. France (xl. Comptes rendus 1: June 5). — E. Webb, 'Le Roussi des feuilles de Sapin.' — D. Clos, *Cyclamen linearifolium* DC. — —. Boulay, 'Quelques notes sur l'étude des *Rubus* en France.' — W. Russell, 'Sur les ægagropiles marines.'— E. Mesnard, 'Transformations pendant la germination des graines.' — H. J. de Cordemon, 'Métaxylème dans certaines Liliacées.' — M. Hovelacque, 'Caractères anatomiques du *Lepidodendron selaginoides*.'—L. Guignard, 'Le tégument séminal chez les Capparidées, Résédacées, Hypericacéés, Balsaminées, et Linacées.'—A. Battandier, 'Sur un *Doronicum* de l'Atlas.'—P. Van Tieghem, 'Sur les genres méconnus ou nouveaux de la famille des Thyméléacées.'

Bull. Torrey Bot. Club (May).— C. C. Curtiss, 'Seeds of native Orchids' (3 plates). — T. C. Porter, 'Grasses of Pennsylvania.' — Id., '*Solidago humilis*' (3 plates). — C. H. Kain, 'Francis Wolle' (Dec. 17, 1817–Feb. 10, 1893).—F. H. Knowlton, 'Nomenclature.' —J. K. Small, 'American species of *Polygonum*' (*P. Sawatchense*, sp. n.: 1 plate). — T. Morong, 'Thomas Hogg' (Feb. 6, 1820–Dec. 30, 1892).—F. V. Coville, 'George Vasey.'

Erythea (June).—E. L. Greene, 'Novitates Occidentales.'—Id., 'Corrections in Nomenclature.' — Id., 'New Fashion in Writing Plant Names.' — L. B. Bridgman, 'Zoospores in *Spirogyra condensata*.' — J. M. Holzinger, 'Range of *Amorpha fruticosa*.' — J. G.

Lemmon, 'Notes on W. American *Coniferæ*.'—W. L. Jepson, *Rhus trilobata* Nutt., var. nov. *quinata*.

Gardeners' Chronicle (May 27). — *Cotyledon Barbeyi* Schweinf., sp. n. — (June 10). *Kniphofia longicollis* Hort. Leichtlin, sp. n.— *Saintpaulia inonantha* H. Wendl. (fig. 104).— R. A. Rolfe, 'Garden Orchids' (*Lissochilus*). — (June 17). *Chlorophytum brachystachyum* Baker, *Iris Athoa* Foster, spp. nn.

Irish Naturalist (June). — R. Ll. Præger, 'Flora of Armagh.'— H. & J. Groves, 'Notes on Irish *Characeæ*.'

Journal de Botanique (May 1). — E. G. Camus, 'Orchideés de France.'—L. Guignard, 'Sur le développement de la graine.'—H. Hua, '*Paris* et *Trillium*.'—P. Hariot, 'Le trois genres *Trentepohlia*.'

Midland Naturalist.—W. Phillipt, 'The Breaking of the Shropshire Meres' (2 plates).—J. E. Bagnall, 'Flora of Warwickshire.'

Oesterr. Bot. Zeitschrift (June). — R. v. Wettstein, 'Die Arten der Gattung *Euphrasia*.'—R. H. Franzé, '*Eudorina elegans* Ehrbg.' (1 plate).—K. Schiffner, 'Morphologie und systematische Stellung von *Metzgeriopsis pusilla*' (1 plate). — H. Zukal, 'Mykologische Mittheilungen' (2 plates): *Lecythium*, gen. nov.). — A. Nestler, 'Eigenthümlichkeiten im anatomischen Bau der Laubblätter einiger Ranunculaceen' (2 plates). — J. Murr, 'Zur Flora von Nordtirol.'

Trans. Linn. Soc. (2nd Ser. Bot. iii.: May). — P. Groom, 'On Bud-protection in Dicotyledons' (2 plates).

BOOK-NOTES, NEWS, &c.

The Editor of *Natural Science*, who still modestly withholds his name, has been good enough to recognise the existence of the *Journal of Botany*, and to discover in it a "tendency." "The *Journal of Botany*," he says, "has been showing a tendency towards Cryptogamic Botany during recent years. In the April number there is a paper on Fresh-water Algæ, one on Marine Algæ, one on a Moss, one on Hepaticæ, and a long obituary notice of a Cryptogamic Botanist. The editor probably means no more by this than that Cryptogamists (even though one fewer) are getting too many for him." So far as we are able to understand our young contemporary—and we admit that "even though one fewer" baffles our ingenuity,—it is implied that the Editor of this Journal is unwilling to insert papers on Cryptogams, but is overpowered by the force of circumstances in an unequal conflict. As a matter of fact, however, the Journal has always been open to cryptogamists, and has always been largely used by them—the first paper in our first number (in 1863) was on a cryptogam: and the only inference which can reasonably be drawn from the employment of our pages by cryptogamists is the satisfactory one that, although more than one serial now exists expressly for their communications, this Journal has advantages as a medium of publicity. We are

unconscious of any other meaning which can be attached to our action: and, so far from the cryptogamists "getting too many" for us, we shall be glad to welcome more of them as contributors to our pages.

An extremely well printed and handy *Check-list of the Plants of Gray's Manual*, compiled by Mr. John A. Allen, has just been issued by the Herbarium of Harvard University. An appendix is given, "in which an attempt has been made to enumerate the additional plants found within the limits of the *Manual* since the issue of the sixth edition." The names of introduced plants are printed in italics, and we are thus enabled to see at a glance how largely adventive species contribute to make up the present North American flora.

The worst index we have ever seen—and our experience is large—is that issued for vol. xxi. of *Grevillea*, in its June number. It is mainly arranged according to the specific names, the genera to which these belong being printed *after* them, sometimes in full, sometimes in a shortened form. Here are the first six entries:—

"abortivens (Agar.)
acaciæ (Spærophragmium) [sic]
acaciæ (*Triphrag.*)
acicolum (Cenangium)
adequata (Agar.)
adequata (Inocybe)."

If there is a worse method of indexing than this, we should be glad to know of it. But this is not all. Mixed up with these are the names (generic, not specific) of authors whose papers are noticed—an explanation which we discover for ourselves, as none is given in the index: thus:—

"brachypoda (Pestaloz.)
Braithwaite, R., M.D.
brevis (Ectocarpus)
brunneo-pictus (Agar.)
Buffhami (Gommophyllum) [sic]
Buffham, T. H."

Those who wish to look up contributions to any one genus can only do so by hunting through the whole list of names. After eight pages of this kind of thing comes "original articles," the titles of which are given in exactly the form and order in which they appear in the Magazine: so that "New or critical British Fungi, G. Massee," is entered thrice, and so throughout. There is no list of contributors, of books reviewed, of papers cited—nothing even to show whereabouts the various branches of cryptogamy are to be found. Moreover, the index of species, such as it is, is ridiculously incomplete, even novelties being omitted; it is also inaccurate, and has abundant misprints. It can only fitly be described by one of the adjectives it contains—"asininus."

The people who frequent the Manchester Museum, Owens College, will not gain much information from the "Museum Handbooks," if the one devoted to an "outline classification of the Vegetable Kingdom" is to be taken as typical. It is a bare enumeration of the names of orders, occupies (title and blanks included) sixteen pages, and costs twopence! We fail to perceive any possible use which it can serve in connection with the Museum, nor can we imagine that the sale will cover the cost of production, slight as that must have been.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which has been published in the 'Journal of Botany' during the last four years, has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief.

Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended, and has been brought down to the end of 1892.

The plan of the work, as readers of the 'Journal of Botany' will be aware, has been to be liberal in including all who have in any way contributed to the literature of the science, who have made scientific collections of plants, or who are known to have otherwise assisted in the progress of Botany, exclusive of pure Horticulture. Where known, the name is followed by the years of birth and death, and in other cases an approximate date is given. Then follows the place and day of birth and death, the place of burial, chief titles, dates of election to the Linnean and Royal Societies, or chief University degrees. In conclusion, reference is made to the chief sources of further information, in which Pulteney, Rees, Pritzel, Jackson, and the Royal Society's Catalogue are first quoted, and then the fullest known record, with a note of any portrait and of genera dedicated to the various persons catalogued, or, in the absence of genera, of species. The book comprises about 2000 names.

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SCORTECHINI'S MALAYAN FERNS.

By Col. R. H. Beddome, F.L.S.

In November, 1887, I published in this Journal a list of the ferns collected in and around Perak by the Rev. Father Scortechini. This collection was deposited in the Natural History Museum, South Kensington, after having been exhibited at the Colonial Exhibition. The Rev. Father made further collections before his lamented death, and Dr. King, of the Calcutta Botanical Gardens, has lately forwarded one set of these to Kew, and a similar set to me. The following is a list of the species represented which did not occur in the first collection, those marked with an asterisk being, I believe, new to the Perak district.

Gleichenia hirta Bl.

Hymenophyllum dilatatum Sw.

Trichomanes hispidulum Mett.

Alsophila comosa Hook.—*A. dubia* Bedd.

**A. latebrosa* var. *denudata*. Appears to agree with the type of Malayan *latebrosa* in cutting and venation, only the main and partial rachis and the rachis of the pinnules are quite glabrous underneath, giving it a very different appearance. The indumentum on the upper side is similar to the type. It may, when better known, prove to be a new species. Some of the specimens were labelled "*Beddomei*," and others "*Scortechinii*," MS. names of Scortechini and King.

**A. ornata* var. *sikkimensis*. Agrees with the Himalayan fern described by Clarke and Baker under the name of *sikkimensis*, *Journ. Linn. Soc.* xxiv. 409, except that the stipe and main rachis are more prominently muricated.

**Diacalpe aspidioides* Bl.

Davallia triphylla Hook.

D. divaricata var. *amplissima*. This fern is the same as Mr. Mann's Cachar var. mentioned at page 14 of the *Supplement to the Ferns of British India* (1892). It was called by Scortechini *D. amplissima*. It is, I think, sufficiently distinct from the type to be considered a variety.

Microlepia Kurzii Cl.

Schizoloma davallioides Bl.—*S. ensifolia* Sw.

Adiantum caudatum Sw.

Hypolepis punctata Bedd.

**Pteris semipinnata* var. *latilobata*. Texture more coriaceous than in the type; the wing and lobes of the pinnæ more than double as broad; veins rarely somewhat anastomosing.

Litobrochia incisa var. *integrifolia*. Pinnules perfectly entire, but, unlike Mr. Day's specimens, a basal pair of auricles is present.

Lomaria procera Spr.

**Plagiogyria euphlebia* Kze. Pinnæ less acuminate and less serrated than in the Indian examples.

Thamnopteris Nidus var. *musæfolia* Mett. Fronds 14 in. wide.

Asplenium Wightianum var. *vulcanicum* Bl.—*A. unilaterale* Lam.

Diplazium Prescottianum Wall. After seeing copious specimens of the Malayan *sylvaticum* from King's collectors and others, I think that this should rank as a distinct species.

Hemidictyum Finlaysonianum Wall.? A simple fronded state. Specimens poor and insufficient.

Polystichum semicordatum Sw.

Aspidium semibipinnatum Wall.—*A. repandulum* Willd.—*A. polymorphum* Wall.—*A. decurrens* Presl.

Pleocnemia membraniifolia Presl. Contracted form.

Nephrodium brachyodon Bl.—*N. larutense* Bedd.

Polypodium subpinnatifidum Bl.—*P. nutans* Bl.

**P. repandulum* Mett. var. *malayanum*. Agreeing with the Ceylon species, except that the sori, instead of being only slightly immersed, are deeply sunk in pits or cavities with raised margins. Scortechini considered it a new species, calling it *brevifrons*.

***Goniophlebium Prainii**, n. sp. Rhizome stout, densely clothed with long hair-pointed chestnut scales, which are very iridescent on the broader portion near their peltate base; stipes 1½–2 ft. long, firm, erect, naked; fronds deltoid-lanceolate, about 1 ft. long by 10 in. broad at base, pinnate; pinnæ numerous, about ¾ in. broad, narrow-lanceolate from a broad dilated base (which never forms a wing to the rachis, the pinnæ being quite separate), quite glabrous on both sides, except some minute scurfy scales and a few hairs on the partial rachis below; margins slightly crenated, particularly towards the apex; texture somewhat papyraceous; veins very prominent on both sides; areoles in 2 series, with a few free or anastomosing veinlets towards the margin; sori in 1 or 2 series.—Perak. Sent under the name of *amœnum*, but quite unlike that or any other described species.

Niphobolus adnascens var. *hoyæfolius* Moore.

Drynaria quercifolia L.

Pleopeltis superficialis Bl. var. *latifrons*. The peltate scales of the rhizome black, with chestnut margins, more closely adpressed, rounded, and not spreading; fronds on shorter stipes, and shorter and broader than in the type. Perhaps a distinct species, but very closely allied to the Himalayan fern—Scortechini named it "*peltata*"; also gathered by Dr. King's collectors.

**P. Zippelii* Bl.—*P. pteropus* Bl.

P. laciniata Bl. A large suite of specimens from Dr. King and others tends to prove that this species is not distinguishable from *trifida*, except in its sori being deeply sunk.

P. dilatata Wall.

Antrophyum coriaceum Wall.

Elaphoglossum latifolium Sw.

Gymnopteris spicata var. *latifrons* Bedd.

NOTES ON INDIAN FERNS.

By Col. R. H. Beddome, F.L.S.

At page 5 of the *Supplement to the Ferns of British India* I referred the two ferns, *Dennstœdtia ampla* and *Kingi* by mistake to *Dicksonia*; they are true Dennstœdtias.

Schizoloma Gueriniana Gaud. is from the Moluccas, not from Malacca, and must be eliminated from the ferns of British India.

Asplenium subavenium Hooker. Further specimens prove this to be only a form of *A. hirtum*.

A. contiguum Kaulf. The Nilgiri and Anamallay fern figured at Plate 140, F.S.I., should remain under this name; the typical "*caudatum*," with long, narrow, very finely caudate pinnæ, and sori closely pressed against the midrib, has only been found (within our limits) in the Malay Peninsula, and has not been figured by me; *contiguum* is nearer in its sori to *caudatum* than to *falcatum*.

Diplazium chlorophyllum Baker. This should be omitted from our limits, the Penang fern being certainly only *tomentosum*.

D. Griffithii Moore, Ind. Fil. 331. "Fronds deltoid, pinnate, bipinnatifid, subcoriaceous; pinnæ curved or ascending, the lower distinctly stipitate, elongate-triangular, acuminate, the upper oblong-acuminate, sessile, the uppermost confluent, forming an acuminated pinnatifid apex; pinnules oblong, falcate, subauriculate, acute, crenate-serrate, those of the lower pinnæ slightly unequal; sori curved, borne near the costa. Stipes 9–12 in. long; frond 12–15 in. long, and nearly as much in width across the base." The above is Moore's excellent description of this fern. It has been collected by Clarke at Surnaween, Khasi Hills, 5000 ft. alt. (Nos. 45186 & 45594); also abundantly by G. Mann in the same locality, and by Jerdon and Oldham. (Mettenius's and Hooker's types of *Griffithii* are the fern I figured under that name at Tab. 328, F. B. I., now referred to *umbrosum* var. *multicaudatum*, hence much confusion until Mr. Mann unravelled it in the Kew Herbarium.) It is the fern referred to by me under *latifolium* at page 188 of the *Handbook*. Mr. Clarke has referred it to *sylvaticum*, and Mr. Baker to *latifolium*; it is nearest to *latifolium*, from which its comparatively small, short, very deltoid fronds sufficiently distinguish it. Mr. Mann has gathered the true *sylvaticum* in the Nambur Forest, Assam, with the margins of the pinnæ as in the Perak specimens, rather more cut than in S. Indian specimens, but less so than in Thwaites's Ceylon var. *dentatum*, C. P. 3892.

Nephrodium evolutum var. *β*., page 77, *Fern Supplement*. Copious specimens of this fern from Mr. Mann prove it to be quite distinct from *evolutum*, so I separate it as **N. Gustavi** (after Mr. G. Mann); it has a widely creeping rather thin rhizome with distant stipes; the pinnæ are similar to those of *multilineatum* var. *assamicum* in texture, &c., and 2–3 pairs of veins anastomose, 2–3 pairs of the lower pinnæ are distant and much reduced in size, or more rarely the upper portion of the stipe is more or less auricled. Mr. Mann's specimens are all from the Nambur Forest; Mr. Clarke gathered it

at Bocajau, 400 ft. alt. on the Naga Hills. I am not sure that Mr. Mann's fern from Kopili hot springs, 1000 ft. alt., belongs here, not having seen the rhizome; the pinnæ are very similar, but rather less cut down, 5–6 pairs of veins anastomosing.

N. multilineatum var. *assamicum*. The Assam form alluded to under *multilineatum* in the *Supplement to the Handbook* can readily be distinguished from *multilineatum*, and may have to be ranked as a species. The rhizome is very stout and shortly creeping, with the stipes approximate; the auricles are small and lanceolate, and more like those of *truncatum*, but the texture of the frond is that of *multilineatum* and *Gustavi;* were it not for the very different rhizome, I should refer it to *Gustavi*. It is important that field botanists should note how far the rhizome of these two ferns is constant in different soils and situations.

SOME PLANTS OBSERVED IN E. SCOTLAND, JULY AND AUGUST, 1892.

By the Rev. Edward S. Marshall, M.A., F.L.S.

My northern tour last year was a varied one, embracing lowland, alpine and maritime districts. Two or three very enjoyable days were spent at Faldonside, Selkirkshire, where I was the guest of Mr. W. B. Boyd. By his permission I publish here, in addition to a few novelties detected by myself, several species which, though long known to him as growing in the neighbourhood, do not appear to have been recorded. Moving thence to Forfar, I had the great advantage of being guided to the rich flora of Rescobie and Restenneth by Messrs. John Knox and Walter Graham, so that few of the rarities were missed. A few hours' walk from Blairgowrie to Ardblair and Marlee lochs produced little of special interest; but from the Spittal of Glen Shee, my headquarters for nearly a fortnight, several productive expeditions were made. My special object in going there was to investigate the hybrid willows of the vicinity; those met with form the subject of a short paper in the *Annals of Scottish Natural History* for January, 1893, pp. 28–31. Perhaps I may as well mention here the more interesting of them:—*Salix Caprea* × *Lapponum*, from the Lochsie, Glen Shee; *S. Lapponum* × *nigricans*, from Carnlochan; *S. Lapponum* × *repens* and *S. Phylicifolia* × *repens*, from the Lochsie (these four appear to be new to Britain); *S. herbacea* × *lanata* and *S. herbacea* × *Myrsinites*, from Glen Callater; *S. aurita* × *Lapponum*, in three forms, from the Lochsie; and *S. nigricans* × *repens*, from near the Spittal. After leaving Glen Shee I travelled to Beauly, and spent a few days in examining the littoral and moorland vegetation of the neighbourhood. The most interesting plant obtained was *Alisma ranunculoides* var. *zosterifolium* Fries, already recorded in this Journal.

An asterisk denotes a "new county record"; the Watsonian vice-counties being 79 Selkirk, 89 E. Perth, 90 Forfar, 92 S. Aberdeen, 96 E. Inverness, and 106 E. Ross.

My obligations to Mr. Arthur Bennett, of Croydon, are again very great. Help has also been received from Messrs. Alfred Fryer, F. J. Hanbury, Linton, and Moyle Rogers.

Ranunculus Drouetii Godron. Sparingly near the boat-house, on the north side of Rescobie Loch, *90.—*R. peltatus* Schrank, var. *elongatus* Bab. (*Batrachium elongatum* F. Schultz). Cauldshields Loch, *79; determined by Mr. Bennett. A curious little submerged *Ranunculus* grows in another part of the same sheet of water; for this, as well as for two or three other forms obtained, I have hitherto failed to get a definite name.—*R. Lingua* L. Unusually abundant in marshes near Faldonside.—*R. Steveni* Andr. Rocks in Glen Shee, and near the top of Caenlochan Glen. I do not know whether this differs from *R. vulgatus* Jordan, placed under *acris* in the last edition of the *London Catalogue*.

Aquilegia vulgaris L. This occurs by the stream, a little below the Spittal of Glen Shee, but evidently as an escape from one of the gardens.

Berberis vulgaris L. Hedges near Faldonside, *79; almost certainly planted.

Nymphæa alba L., var. *minor* Syme. Peaty pool at the west end of Loch-nam-Bonnach, near Beauly.

Corydalis claviculata DC. On a bank at Kilmorack, near Beauly.

Fumaria densiflora DC. Plentiful in cornfields between Blairgowrie and Marlee Loch, 89.

Cardamine flexuosa With. Woods at Faldonside, *79.

Cochlearia anglica L. Abundant by the Beauly Firth, *96, and at Dingwall, *106. A curious plant, which has leaves not unlike the English coast form, but differs from it in the fruit. It was mostly over at the time of my visit, and deserves further study.

Sisymbrium Thaliana Hooker. Ascends to 1700 ft. on rocks in Glen Shee.

Lepidium Smithii Hooker. By the Shee Water, at 1100 ft.; one fine plant.

Thlaspi alpestre L. A small specimen was met with in Caenlochan Glen at fully 2900 ft., on the opposite side to its recorded station.

Viola canina L. Sparingly in Glen Shee and Glen Beg, 89; and by the Beauly river, *96.

Polygala oxyptera Reichb. Frequent in Glen Shee, *89, on dry banks; ascending to 1700 ft.

Stellaria nemorum L. Growing in a streamlet above Corrie Kandor, *92, at 3000 ft.; very scarce, small, and flowerless, but unmistakable.

Sagina Linnæi Presl. On Craig Leacach, and a hill adjoining the Cairnwell, 89. A remarkable form with the leaves somewhat ciliate, and the pedicel and calyx more or less glandular, was found on exposed rocks in Glen Canness, at about 2500 ft.; it may be called f. *glandulosa*.

Lepigonum salinum Fries. By the Beauly Firth, near Lentran. *96.

Hypericum quadratum Stokes and *H. hirsutum* L. grow together on the rocks of a railway-cutting, about a mile and a half north of Dingwall, associated with a quantity of *Astragalus glycyphyllos* L.; all three are true natives.

Geranium pratense L. Near Conan, 106; certainly wild.—*G. lucidum* L. Among rocks in Glen Shee, at 1600 ft.; very scarce.

Anthyllis Vulneraria L. This occurs on the Cairnwell, at an elevation of 2700 ft.; *Vicia sepium* L. attains the same altitude in Caenlochan.

Lathyrus pratensis L. A pretty form with sulphur-coloured flowers was noticed on the railway-bank at Beauly.

Prunus Avium L. On and near the inaccessible cliffs of the Falls of Kilmorack, near Beauly, there are trees belonging to this species which have every appearance of being indigenous; the fruit is small, red, and rather bitter.—*P. Padus*. On the banks of the Tweed at Faldonside, *79.

Rubus plicatus W. & N. Kilmorack, *96; also near Dingwall.—*R. villicaulis* W. & N. Near Blairgowrie, *89; Beauly, *96. — *R. mucronatus* Bloxam. Above Kilmorack, *96.—*R. Gelertii* Fridericksen. Between Fowlis and Dingwall, *106, in quantity. Named by Rev. W. Moyle Rogers. — *R. macrophyllus* W. & N. A striking plant was met with by hilly roadsides above Tain, which Mr. Rogers considers to be best placed here, in an aggregate sense.—*R. Radula* Weihe. Near Faldonside, *79. — *R. dumetorum* W. & N. A pretty little shrub, which Mr. Rogers considers intermediate between *diversifolius* and *scabrosus*, grows beside the railway at Conan, *106. I had referred it to a small state of *diversifolius*.—*R. corylifolius* Smith. About Beauly, *96.

Geum rivale × *urbanum* (*G. intermedium* Ehrh.). Rather frequent near Faldonside, *79. I also saw it at one spot near Conan.

Agrimonia Eupatoria L. Near Dingwall, *106.

Rosa spinosissima L. Two or three bushes by the Beg Burn, just above its junction with the Shee Water, at 1150 ft.—*R. involuta* Smith. Near Faldonside, *79, where it was pointed out to me by Mr. Boyd. A very beautiful rose, which was locally plentiful on the coast between Lentran and Beauly, Mr. Rogers considers to be var. *Nicholsoni* Crépin; Mr. Baker has referred it to *R. mollis*, which I hardly think to be correct, from my own notes on the living plant. Several interesting roses grow about Beauly, concerning which I have as yet no satisfactory determinations.—*R. mollis* Smith. Most abundant near Faldonside, *79; var. *cærulea* Woods, was gathered near Philiphaugh.—*R. rubiginosa* L. I met with this in no fewer than five counties, and only one of its stations looked suspicious.—*R. micrantha* Smith. Plentiful in hedges near Faldonside, *79, but probably planted, as it is associated with *Berberis*; unusually sweet-scented, with larger and deeper-coloured flowers than in the south of England form.—*R. agrestis* Savi. Several fine bushes, near Philiphaugh, *79; new to Scotland. Flowers large, pink, with the petals cuneate below so as to appear distant; styles very hairy. Another plant from Beauly, which Mr.

Rogers places under this species, appears to me to form a connecting link with *R. Borreri* Woods, which occurs thereabouts, the other *canina* varieties noticed being *lutetiana*, *urbica*, *dumalis*, *arvatica* and *dumetorum*. The last named was also found near Faldonside.—*R. arvensis* Hudson. A fine bush, to my great surprise, grew near the iron railway-bridge over the Conan river, *106; but its presence as a garden shrub at the station, about half a mile away, solved the question of its origin.

Pyrus torminalis Ehrh. A fine tree, fruiting freely, was met with beside the Conan river, not far above the last-named plant; but I suppose it to have been introduced.

Hippuris vulgaris L. In a swamp, near the farm of Easter Moy, Conan river, 106. Rare, so far north.

Myriophyllum alterniflorum DC. Beauly *96.

Callitriche stagnalis Scop. Long Moss, near Faldonside, *79.—Var. *serpyllifolia* Lönnroth. Muddy cart-track in Glen Shee, at about 1200 ft. *89.—*C. hamulata* Kuetz. Ascends to 2800 ft. on a hill adjoining the Cairnwell, just in S. Aberdeen.—*C. autumnalis* L. Loch Schechernich, 89; Loch Ussie, near Conan, 106.

Lythrum Salicaria L. Near Beauly, 96.

Chrysosplenium alternifolium L. Faldonside, *79.

Epilobium angustifolium L. Very dwarf and flowerless at 2600 ft. on exposed rocks, Meall Odhar, 89.—*E. montanum* L. reaches the same elevation in Caenlochan.—*E. palustre* L. The form *lavandulæfolia* Lec. & Lamotte (var.) was found in Glen Shee, well marked.—*E. alsinifolium* × *anagallidifolium*. Head of Glen Thailneiche, *89. Streamlet in Corrie Kandor, *92; ravine of Glen Canness, 90. In all three cases the parents grew with it.—*E. montanum* × *palustre*. Ditch near Kilmorack, *96. I had often previously searched for this hybrid without success. My plants are much nearer to *palustre* in habit, but the inflorescence, shrunken capsules, &c., leave little room for doubt.—*E. obscurum* × *palustre*. Restenneth, 90; Glen Shee, 89. — *E. obscurum* × *parviflorum*. Restenneth, *90.

Circæa intermedia Ehrh. Wood by the Tweed at Faldonside, *79; this had been passed by as *C. lutetiana*, with which it seems to be frequently confused.

Cicuta virosa L. Whitlaw Moss, near Faldonside, *79; long known to grow there.

Pimpinella Saxifraga L. Ascends to 2400 ft. in Glen Shee.

Œnanthe crocata L. In one locality on the right bank of the Beauly river, below the railway-bridge; very rare in the north.

[*Asperula taurina* L. was given to me by Mr. Boyd in a fresh state from the banks of the Yarrow, below Selkirk, where it is naturalized].

Bellis perennis L. Reaches 3000 ft., above Caenlochan.

Arctium intermedium Lange. Beauly river, below Kilmorack. I understand from Mr. Bennett that Lange considers his plant identical with Lejeune's *A. nemorosum*; in which case it seems as though our present "*A. nemorosum*" would require re-naming.—Var. *subtomentosum* Ar. Bennett. A plant with densely woolly

heads, about identical with Mr. Griffith's Anglesey form, was found above Kilmorack, *96, and by the Conan river, *106.

Carduus crispus L. Coast between Fowlis and Novar, *106; in good quantity, and looking wild.

Hieracium Pilosella L., var. *nigrescens* Fries. Ledges in Caenlochan Glen, at 2900 ft. Mr. Hanbury has recorded it from Glen Dole. In cultivation this remains, so far, a remarkably distinct-looking plant.—*H. holosericeum* Backh. Sparingly on a hill adjoining the Cairnwell, 89, together with *H. eximium* Backh. and *H. chrysanthum* Backh.—*H. iricum* Fries. Ascends to 2800 ft. in Caenlochan.—*H. argenteum* Fries. In various parts of Glen Shee, but rather scarce.—*H. murorum* L., var. *rotundatum* Kit. Plentiful by the burn descending from the Cairnwell into Glen Beg, *89, at 1800 to 2000 ft.; precisely identical with a Clova plant collected by me in 1888, and assented to by Dr. Lindeberg. This pretty and constant variety has the rounded leaves more or less blotched, thin, of a palish green, often purplish beneath. I also found it at 2600 ft. in Glen Canness, and by the Lochsie, Glen Shee, at 1800 ft.—*H. flocculosum* Backh. With the last, but scarcer, by the burn descending from the Cairnwell, *89. This species often bears a superficial resemblance to forms of *H. anglicum*.—*H. prenanthoides* Vill. By the Beg Burn, and on rocks in Glen Beg, 89.—*H. strictum* Fries. By the Conan river, 106.—*H. crocatum* Fries. With the last, and sparingly in Glen Shee.—*H. Eupatorium* Grisebach (*corymbosum* Fries). Shee Water, scarce; railway-bank near Conan station, 106.—*H. Marshalli* Linton. Rocky ravine, Glen Canness, ascending to 2700 ft.—*H. Sommerfeltii* Lindeberg. A form with yellow styles and ligules pilose at the tips grows on rocks on the S. side of Glen Thailneiche, *89.—*H. buglossoides* Arvet-Touvet. Near the Spittal of Glen Shee, *89; only a few specimens were seen.—*H. euprepes* F. J. Hanbury. Stream sides in Glen Shee, from 1100 up to 1800 ft., *89; also in Glen Callater, but scarce.—*H. clovense* Linton. Hill adjoining the Cairnwell, *89, at 2700 ft., on limestone; also in Glen Canness. Named by Rev. E. F. Linton.—*H. Farrense* F. J. Hanbury. Glen Shee, *89. The Corrie Ardran locality for this (in 88 Mid-Perth) should be erased, as the plant collected there was *H. Pictorum* Linton.—*H. cæsio-murorum* Lindeberg. This handsome and well-marked species occurs in various parts of Glen Shee, *89, from 1000 to 1700 ft.—*H. auratum* Fries. Shee Water, 89; Beauly river, *96. I found one or two specimens in the latter locality with the styles almost black instead of pure yellow; otherwise they were quite typical.—*H. reticulatum* Lindeberg. Conan river, *106. I think this a good species, though near *H. Eupatorium;* in cultivation the rosette of root-leaves is very characteristic.

Lactuca muralis Fresen. Scarce, but certainly a true native, on the wooded bank of the Beauly river, below the Falls of Kilmorack, *96. A very rare plant in North Britain.

Sonchus asper Hoffm. Not unfrequent near Beauly, *96.

Calluna Erica DC. The var. *incana* occurs near Beauly.

Loiseleuria procumbens Desv. Sparingly on the Perthshire side of the Cairnwell, near the summit.

Pyrola minor Sw. Reaches 2900 ft. in Caenlochan.

Symphytum tuberosum L. Banks of the Tweed, Faldonside, *79; by the Conan river, *106.

Myosotis palustris With., var. *strigulosa* (Reichb.). Near Beauly, *96.—*M. repens* D. Don. Near Beauly, *96.

Veronica arvensis L. Ascends to 1600 ft. by the Braemar road in Glen Beg, 89.—*V. persica* Poir. Cultivated ground about Beauly, *96.

Utricularia neglecta Lehm. Long Moss, near Faldonside, *79; pools on Restenneth Moss, *90.

Calamintha Clinopodium Benth. By the Beg Burn, 89.

Galeopsis speciosa Miller. Near Conan, 106.

Atriplex littoralis L. Near Lentran, towards Beauly, *96.—*A. patula* L. About Lentran and Beauly, *96; both type and var. *erecta*.—*A. Babingtonii* Woods, var. *virescens* Lange. Near Lentran, *96, and Dingwall, *106.

Rumex sanguineus L., var. *viridis* (Sibth.). Conan, *106.—*R. crispus* × *obtusifolius* (*R. acutus* L.). Glen Shee, 89.—*R. domesticus* Hartmann. Glen Shee. With this grew a plant which seems to be a hybrid between it and another species, probably *crispus*; but the fruit characters are too immature to allow of certain determination.—*R. Hydrolapathum* Huds. In a reed-bed of the Beauly river, *96, below the town; only one plant seen. Apparently very rare in Scotland.

Euphorbia dulcis L. Thoroughly naturalized on the bank of the Conan river, flowing through the grounds of Brahan Castle, *106.

Humulus Lupulus L. Roadside near Kilmorack, *96; not looking like an introduction, though no doubt really such.

Ulmus montana Smith. About Faldonside, *79.

Betula pubescens Ehrh. Not uncommon near Beauly, *96.

Salix Smithiana Willd. I noticed two bushes by the roadside near Dalnagarn, between the Spittal of Glen Shee and Persie Inn, *89.

Goodyera repens R. Brown. Very plentiful in woods near Beauly, Conan, and Strathpeffer. Babington's remark about the leaves being "netted with brown" must be based on dried material; they are not so when fresh.

Orchis mascula L. I obtained a specimen in good flower, high up on the rocks in Caenlochan, where *Gentiana nivalis* grows, at 2900 ft.—*O. incarnata* L. Whitlaw Moss and Long Moss, near Faldonside, 79; ascent of Craig Leacach, 89, up to 1700 ft.; and very fine in a marsh to the west of Marlee Loch.—*O. latifolia* (segregate). Mosses near Faldonside, *79; near Beauly, *96.

Habenaria conopsea Benth. Moorland near Faldonside, *79.—*H. viridis* R. Brown. Ledges of Caenlochan, at 2800 ft.

Juncus alpinus Vill. A plant or two in Glen Shee, 89. Abundant by Loch Ussie, *106; a slender and remarkable plant, which Dr. Buchenau names **a**. *genuinus*, *forma gracilior*.

Luzula multiflora Lej. Moors near Faldonside, *79.

Sparganium simplex Hudson. Faldonside Moss, *79.—*S. affine* Schnizl. Moorland streamlet near Conan, *106, and in pits near

the Beauly river, 96. One of the species grows in Loch Brotachan, 92, at an elevation of 2300 ft., but was not seen in flower.—*S. minimum* Fries. Long Moss, near Faldonside, *79. Also by Loch-nam-Bonnach, 96, and near the Spittal of Glen Shee.

Potamogeton natans L. Near Faldonside, *79. At 2300 ft. in 92 (Loch Brotachan).—*P. polygonifolius* Pour. Long Moss, near Faldonside, *79.—*P. coloratus* Hornem. (*P. plantagineus* DuCroz). With the last, *79. — *P. alpinus* Balbis (*P. rufescens* Schrader). Moorland stream near Conan, *106.—*P. heterophyllus* Schreber. At 2300 ft. in 92 (Loch Brotachan). A pretty little form grows in Loch Ussie, 106, and a deep-water form with very long peduncles, at the west end of Marlee Loch, 89.—*P. heterophyllus* × *perfoliatus* (*P. nitens* auct.). In Loch Ussie, *106, with the parents.—*P. upsaliensis* Tis. S. side of Rescobie Loch, *90. Messrs. Knox and Graham agreed with me, at the time of its discovery, in thinking that this might be *crispus* × *lucens*; but Mr. Fryer has shown good reasons for discrediting the *crispus* parentage. Mr. Bennett agrees with him in determining the plant as above. That it is a hybrid I have hardly any doubt; not improbably *perfoliatus* × *Zizii*. New to Scotland, but known from E. Anglia.—*P. Zizii* Roth. The Cauldshields Loch (79) plant can hardly be the same as the hybrid usually called *Zizii* in England, as one of the parents (*P. heterophyllus*) does not grow in the loch. I think that the Rescobie plant is the same thing.—*P. prælongus* Wulf. Cauldshields Loch, 79. This is not a new discovery, but the old record seems to have been overlooked. Loch Ussie, 106.—*P. perfoliatus* L. Plentiful in Loch Brotachan, 92, at 2300 ft., much higher than it had been previously found in Britain. It did not flower last summer, unlike the *heterophyllus* of the same water.—*P. crispus* L. Loch Ussie, *106.—*P. Friesii* Ruprecht. In the small loch at Whitmuirhill, near Faldonside, *79.—*P. pusillus* L. Long Moss, near Faldonside, *79; Loch Ussie, *106. The var. *tenuissimus* Koch grows in pools near the Beauly river, 96, below the village.—*P. Sturrockii* Ar. Bennett. A new station for this well-marked and elegant species is Loch Schechernich, 89; the elevation is somewhere about 1500 ft.

Ruppia rostellata Koch. Coast near Lentran, *96. The var. *nana* Boswell was met with between Fowlis and Novar, *106; my specimens just fit his description. I do not think that this has been obtained before on the shores of the Scottish mainland.

Zannichellia palustris L. Long Moss, *79.

Zostera marina L. In great abundance on the shores of the Beauly and Dingwall Firths; only var. *angustifolia* Fries was seen, with the exception of a scrap of the type, washed up on the shore near Fowlis.—*Z. nana* Roth. In profusion, and fruiting freely, on the muddy coast near Lentran, *96; abundant, but not seen in flower, near Dingwall, *106. These stations considerably extend the limits of its known range in Britain.

Eleocharis multicaulis Smith, Moorland near Loch Ussie, 106.

Scirpus sylvaticus L. A few fine plants at the west end of Marlee Loch, 89.—*S. rufus* Wahlb. Coast near Dingwall, but scarce.

Carex teretiuscula Good. Remarkably fine and abundant by Ardblair Loch, near Blairgowrie, 89.—*C. paniculata* L. Swamp near the Conan river, 106. I believe it to be very rare in the northern Highlands.—*C. curta* Good. Glen Shee. The var. *alpicola* (Wahl.) was well marked on Meall Odhar, 89, at 3000 ft.—*C. rigida* Good. Mr. Bennett believes that the "var. *inferalpina* Laestad." of the *London Catalogue*, would be better named *C. limula* Fries; but he has not been able to see a type-specimen of either. I think that the Glas Maol plant should remain under *rigida* as a variety.—*C. salina* Wahl., var. *kattegattensis* (Fries). I searched several miles of coast, both in 96 and 106, but could only find this sedge in Mr. Druce's Beauly station, where the yellowish tint of its foliage attracts attention from a considerable distance.—*C. Goodenowii* Gay. A queer little viviparous state was obtained by the Canness Burn, 90, near its source. The var. *juncella* grows at Restenneth.—*C. capillaris* L. Ascent of Craig Leacach, 89.—*C. lævigata* Smith. Near Kilmorack, 96.—*C. flava* L. Forms approaching *C. lepidocarpa* Tausch. grow plentifully by Long Moss, 79, and by Ardblair Loch, 89; they differ greatly from the var. *minor* Townsend.—*C. flava* × *fulva* (*C. xanthocarpa* Degl., *C. sterilis* Syme). Near the Spittal of Glen Shee, and in a moorland swamp near Loch Ussie; in the latter case the combination may perhaps be with *chrysites* rather than with *flava*.—*C. chrysites* Link. Beside Cauldshields Loch, *79, and Loch Ussie, 106.—*C. filiformis* L. Whitlaw Moss, *79, and swamp at the W. end of Loch Ussie, *106.—*C. vesicaria* L. Bank of the Conan river, near Brahan Castle, *106; only a few plants seen.

Deschampsia discolor R. & S. Wet moorland, south of Loch Ussie, *106.

Avena pubescens Hudson. Ascends to 1700 ft. on rocks in Glen Shee.

Molinia cærulea Moench. The form or var. *minima* Rabenhorst grows with *Juncus alpinus* in stony ground by Loch Ussie.

Glyceria plicata Fries. Glen Shee, at 1000 to 1150 ft.—Var. *depauperata* Crépin. Muddy roadside, Kilmorack, *96. Named by Hackel; a prostrate form, with the inflorescence nearly or quite unbranched.

Bromus giganteus L., var. *triflorus* Syme (*B. triflorus* L.). Swamp at Easter Moy, Conan river, *106.—*B. asper* Murray. Railway cutting, about 1½ mile north of Dingwall, *106; native.—*B. mollis* L., var. *glabrescens* Cosson. Glen Shee, in sown grass-fields.

Lastrea Filix-mas Presl, var. *paleacea* Moore. At 2600 ft., on a hill adjoining the Cairnwell, 89.—*L. æmula* Brackenbridge. Ascending to Loch-nan-Eun, at the head of Glen Thailneiche, *89; at 2500 ft., in small quantity. An interesting addition to the Perthshire flora.

Botrychium Lunaria Sw. At 2700 ft., on Meall Odhar, 89.

Equisetum variegatum Schleich. By the Lochsie, 89, at 1250 ft.

Chara fragilis Desv. Cauldshields Loch, 79; Loch Brotachan, 92, at 2300 ft. Apparently the var. *delicatula* in both cases.—*C.*

aspera Willd. Cauldshields Loch and Long Moss, 79.—*C. polyacantha* A. Braun. Long Moss, 79.—*C. contraria* Kuetz. Abundant on the south side of Rescobie Loch, 90. It is likely to be already recorded from this station.—*C. vulgaris* L. A small and very dense form, growing on mud, was met with on the border of Long Moss, 79. Mr. Bennett says that it resembles the form called *montana* by Braun.

SOME BRITISH SPECIES OF *ŒNANTHE*.

By Arthur Bennett, F.L.S.

Probably few of the botanists now studying our British Flora are aware of the difficulty there was some years ago in elucidating the three species of this genus standing in the 8th ed. of the *London Catalogue* as *Œ. pimpinelloides* L., *Œ. peucedanifolia* "Poll.," and *Œ. Lachenalii* Gmel. From the publication of the 1st ed. of Babington's *Manual* (1843) wrong naming prevailed, and it was only by the united efforts of Mr. Ball,* Prof. Babington,† and Mr. H. C. Watson‡ that anything like a fair knowledge of them was obtained. Mr. E. Lees's§ paper contained, with some additional information, so many mistakes, that it can hardly be placed in the same category with the others, although he had really better means of arriving at the truth, having gathered all three.

It may be of some interest to take a retrospective glance at the naming of these plants. In 1842 Prof. Babington has two species only (though doubts are expressed), *Œ. Lachenalii* and *Œ. peucedanifolia* (Poll.). See also remarks on, and a full description of, *Œ. pimpinelloides* L. in Bromfield's *Flora Vectensis*, pp. 205, 7. In the 2nd ed. (1847) of the *Manual* we have *Œ. pimpinelloides* L., *Œ. Lachenalii* Gmel., and *Œ. peucedanifolia* Poll. The doubt existing as to the name of the latter was expressed by Mr. Watson, who suggested (*Phytol.* ii. 14) the name of *Œ. Smithii*, if it were proved that the plant named *peucedanifolia* by English authors was neither the plant of Pollich nor the *Œ. silaifolia* of Bieberstein. In the 3rd ed. of the *Manual* (1851) a change is made to *Œ. silaifolia* Bieb.?, with the remark, "Scarcely *Œ. silaifolia* (Bieb.), not *Œ. peucedanifolia* (Poll.)," and in the 4th edition this is repeated. In 1858 appeared the 1st edition of Bentham's *Handbook:* in this, one species (*Œ. pimpinelloides* L.) is made of the three, with two varieties; followed by the remark, "These differences have been shown to depend on soil and situation; at the same time, rather more constant differences have been pointed out in the fruiting umbels, although even here intermediate states show that the two following ['*Œ. pimpinelloides* Brit. Fl. and *Œ. Lachenalii* Brit. Fl.'] should

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* *Ann. Nat. Hist.* xiv. 4 (1844). † *l. c.* 96.

‡ *London Journ. Bot.* iii. 71 (1844); *Phytologist*, i. 1083 (1844); ii. 11, 390; iii. 405.

§ *l. c.* ii. 354.

be considered rather as marked varieties than as true species." Mr. Watson's remark (*Compend. Cyb. Brit.* 78) seems the fittest comment on this passage :—"The comprehensive knowledge of the general botanist is not sufficiently precise; the precise knowledge of the local botanist is not sufficiently comprehensive."

In the 8th ed. of Hooker & Arnott's *British Flora* (1860) we have *Œ. pimpinelloides* L., *Œ. Lachenalii* Gmel., and *Œ. silaifolia* Bieb., the last with the synonym "*Œ. peucedanifolia* Sibth. (non Poll.)." In Babington's *Manual*, 8th ed. (1881), the last plant stands as *Œ. silaifolia* Bieb.?"; in Hooker's *Student's Flora*, ed. 3 (1884), it is styled *Œ. peucedanifolia* (Poll.).

Nyman (*Sylloge*, 1854, p. 155) gives our English plant under "*Œ. peucedanifolia* Poll."; and in his *Conspectus*, p. 298 (1879), he places the English and Irish plant under the same name.

The object of this note is to put on record the opinions of two excellent botanists on this particular plant, as represented by the series sent them consisting of examples grown in my garden from Surrey roots; showing the plant from the seed-leaves to the perfectly ripe fruit, and the decayed winter state.

Maximowicz wrote on April 7, 1889 :—"I have examined your *Œ. silaifolia*, and could not find any stable differences from the continental plant, of which we have lots of specimens from very different European countries. Generally the continental plant has shorter and a little broader leaflets, but some garden specimens from Germany have as long and narrow ones as your British plant. All the rest is identical, however, the fruit excepted, which I never saw so broad and with such broad prominent ribs as yours have. But in breadth and length the parts do vary a good deal, but the ribs remaining always narrower, as in your plant."

Dr. R. Schumann, of the Berlin Herbarium, wrote on March 10th last :—"Regarding the umbelliferous plant, I completely agree with your determination; after having carefully examined it, I can find no difference from *Œnanthe silaifolia* M. B., of which we have a type communicated us by Steven."

As regards the three plants as at present named by our botanists, I find that they are rarely now mixed (by names) one with the other. As to their differences, I have had all three growing for many years. At the time I write (March 11th), *silaifolia* has abundance of radical leaves, while *pimpinelloides* has made no sign of appearing, and does not usually do so until the end of the month. *Lachenalii* I lost when moving to my present home, but I think its radical leaves appeared about the same time as *silaifolia*, or perhaps a little later. Between *silaifolia* and *pimpinelloides* there is abundance of difference; in the first, the radical leaves, on first appearing, grow strictly upright from the ground, only inclining as they grow older; in *pimpinelloides*, they begin, directly they have pushed through the ground, to spread by a very peculiar gyrate growth, the apex of the leaves representing the spokes of a wheel, with the leaf-segments very close together, and pressed close to the ground. They only resemble the detached leaf in *English Botany*, t. 594 (ed. 3), after some weeks.

The first radical leaves of either *silaifolia* or *pimpinelloides* are not shown on the *E. B.* plate. *E. silaifolia* will be in flower sometimes by May 20th* to June 20th. *E. pimpinelloides* in cultivation I have never seen earlier than July 10th. *Lachenalii* I have not seen in flower before July, but in the *Flora of Dorset*, "June to October" is given. I hope to sow seeds of all three at one time, and note their differences in the first year's growth.

I ought to add that Grenier (in a letter to Dr. Boswell in 1853) refers our plant to *E. peucedanifolia* Poll. On this I may perhaps add my own opinion. In the Kew Herbarium there is a specimen from Schultz, which seems to me to exactly agree with the *peucedanifolia* of Pollich, and comparing ours with this I cannot make it agree, but would name our plant *silaifolia* M. Bieberstein, *Fl. Taur. Cauc.* iii. p. 232 (1819).

Finally, I do not believe that any botanist could grow these three plants for several years, carefully watching them at all stages, and regard them as one species, even from a Linnean standpoint.

NOTES ON THE FLORA OF COUNTY ARMAGH.

By R. Lloyd Praeger, B.E., M.R.I.A.

Armagh is a rather small county, with an area of 512 square miles, lying in the north-eastern portion of Ireland. With the exception of its south-eastern corner, where it borders the narrow estuary of the Newry river for a few miles, it is entirely an inland area. Its northern boundary is the southern shore of Lough Neagh, the largest sheet of inland water in the British Islands, and long known as the home of several interesting and extremely rare plants. Armagh forms the most easterly part of the tenth botanical district of *Cybele Hibernica*, which also includes the counties of Tyrone, Fermanagh, Monaghan, and Cavan.

There is a variety of geological formations in Armagh, and these have a due effect in their respective areas, both on the physical features and on the flora. In the north, stretching along the Lough Neagh shores, there is a thick deposit of lacustrine clays of Older Tertiary age; this low-lying area is now covered with extensive peat-bogs. South of this, to the eastward, a tongue of Tertiary basalts protrudes into the county from the basaltic plateau of the north-east, while westward is a corresponding tongue of Carboniferous limestone, the north-eastern extremity of the great central limestone plain of Ireland, bringing with it a number of limestone-loving species. Rocks of Lower Silurian age hold sway over the centre and south-west of the county; here, as on the limestone and basaltic areas, the surface is generally undulating, fertile, and well tilled. In the south-east lies a mass of ancient granites, basalts, and porphyries, which rise in rugged, barren,

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* This early spring it is flowering on May 11th.

heath-clad hills, with flat stretches of poor land between; the highest of these hills is Slieve Gullion (1893 ft.), famous in Irish romance as the scene of marvellous adventures, and as the home of dread magicians and of frightful monsters.

The flora of County Armagh had not in past years received a large amount of attention from local botanists, and, though a number of records of rare plants existed, they were the result of desultory rather than of systematic search. It appeared, therefore, especially in view of the approaching publication of a new edition of *Cybele Hibernica*, that a botanical survey of the county was desirable, and with this object I devoted a three-weeks' holiday last season to a rapid investigation of its phanerogamic flora. For the full list of plants obtained, and their stations, the reader is referred to the pages of the *Irish Naturalist* (January–August, 1893); in the present notes I wish merely to indicate the more interesting features of the flora, to point out the effect of varying petrological conditions, and to briefly compare the Armagh flora with that of adjoining areas.

The total number of plants found in the county, omitting those whose claim to be considered native is more than doubtful, is 616. There is a poverty of maritime and montane species; the former is of course to be expected; as regards the latter, the scantiness of the upland and alpine flora is remarkable, considering the elevation of the southern hills. Out of forty-seven Irish plants of Highland type, only four occur in Armagh, and none of them are confined to alpine situations. *Galium boreale* inhabits only the shores of Lough Neagh (50 ft. elevation); *Vaccinium Vitis-idæa* is recorded from the northern bogs (50–100 ft.), and grows also on the summit of Slieve Gullion (1893 ft.); *Selaginella spinosa* ranges from 700 ft. upwards; and *Isoetes lacustris* in lakes from 200 to 444 ft. Not a single Hawkweed (excepting of course the ubiquitous *H. Pilosella*) was found in the county, although at least fourteen species inhabit the adjoining granite hills of Mourne. Of Mr. Watson's Atlantic type, Co. Armagh possesses only five out of forty-one Irish species—*Sedum anglicum*, *Cotyledon Umbilicus*, *Pinguicula lusitanica*, *Lastrea æmula*, *Hymenophyllum tunbridgense*. Out of eighteen Irish Germanic plants, one only, *Orchis pyramidalis*, grows in the county.

Armagh may conveniently be divided into five botanical regions, defined by physical or geological conditions, and characterised by the presence or absence of certain plants:—(1) Lough Neagh and connecting waters: includes the shores of Lough Neagh, and the banks of the Bann, Newry Canal, Blackwater, and Ulster Canal. *Cicuta*, *Œnanthe fistulosa*, *Butomus*, and *Sagittaria* are abundant throughout these waters, all of which are in direct communication with Lough Neagh, and, with the exception of a single station for *Cicuta*, none of the species mentioned are found in any other lakes or rivers in the county. (2) Northern bogs: embraces the extensive bogs which cover the flat district lying along the southern margin of Lough Neagh. Confined to this region, and occurring in some abundance therein, are *Drosera anglica*, *D. intermedia*, *Vaccinium Oxycoccos*, *Rhynchospora alba*, *Osmunda regalis*; *Ulex Gallii* is con-

spicuously absent. (3) Limestone region: embraces the Carboniferous limestone area in the N.W., and the adjoining patch of New Red Sandstone, which yields a similar flora. *Carduus acanthoides*, *Veronica Anagallis*, *Lamium album*, *Orchis pyramidalis*, *Juncus glaucus*, *Briza media*, are characteristic of this district, most of them being abundant here, and all of them very rare in, or absent from, the rest of the county. (4) Silurian region: extends over the whole central and S.W. portions of the county; surface undulating and well tilled; flora generally uninteresting, but it was here that *Carex rhynchophysa* was obtained. *Lepidium Smithii*, unknown further north, is common on this area; *Linaria vulgaris* becomes much more frequent; *Ulex Gallii* haunts the higher grounds; *Veronica Anagallis* and poppies are conspicuously absent; and the flora generally is the same as that of central Co. Down. (5) Hill region: includes the granite and basalt hills of the S.E. Though an elevation of nearly 1900 ft. is reached, alpine plants are almost absent. Compared with the northern bog district, we find *Ulex europæus* replaced here by *U. Gallii*, and *Myosotis palustris* by *M. repens*; the higher cultivated ground is full of *Raphanus Raphanistrum*, *Lotus major*, and *Chrysanthemum segetum*, which are somewhat rare further north; *Viola tricolor*, *Teucrium Scorodonia*, *Jasione montana*, *Lepidium Smithii*, are also characteristic plants.

The shores of the estuary of the Newry River, in the extreme S.E., yield, of course, a group of maritime species not found elsewhere in the county; among these are *Statice bahusiensis*, *Beta*, *Obione*, *Scirpus Savii*, *Lepturus*. The characteristic plants of the basaltic escarpments of Antrim and Derry are not found on the extension of this formation in N.E. Armagh, since these are in general hill plants, and the surface of the basalt in Armagh is low and fertile.

An interesting point in the flora of Armagh is the occurrence throughout the county of several species widely distributed through the centre and south of Ireland, but of extreme rarity in the north-east and north-west (districts 11 and 12); such are *Hypericum dubium*, *Thrincia hirta*, *Festuca rigida*. Two more, *Ranunculus circinatus* and *Orchis pyramidalis*, with a more limited distribution in Armagh, are also characteristic plants of the centre and south of Ireland, and rare in, or absent from, the north.

As regards the rarer plants of the county, I have already laid before the readers of this Journal (1892, p. 272; 1893, p. 33) some account of the two most interesting plants obtained, namely, *Spiranthes Romanzoffiana* and *Carex rhynchophysa*; respecting which I have nothing to add to my former remarks, except that I gathered the latter again this season; it appears to grow very sparingly in its only station, and is therefore likely to remain a *desideratum* of many British herbaria, unless discovered in other localities.

Another interesting addition to the flora of Armagh is *Calamagrostis Hookeri* Syme, the *Deyeuxia neglecta* var. b. of *London Catalogue*. This grass is in Britain restricted to the shores and islands of Lough Neagh; in a future paper I hope to deal with the distribution of this and other Lough Neagh plants in detail; suffice

for the present to say that it had been found in five stations altogether—two on the Co. Antrim shores of the lake, one in Derry, and two in Tyrone. In three of these stations the plant appears to be now extinct; in a fourth it is rapidly becoming so; and in the fifth it occurs extremely sparingly. It was therefore with feelings of much satisfaction that I found it growing in the greatest profusion in a damp meadow on the margin of Lough Neagh, in the extreme north-east corner of Co. Armagh. It abounded here over an area of perhaps a couple of acres, among *Phragmites*, *Lythrum Salicaria*, and *Lysimachia vulgaris*, growing from two to three feet high; in a space of a few square yards I gathered two hundred stems; the greater portion of these specimens have since been distributed through the two Exchange Clubs.

Among the other more interesting additions to the flora of Armagh, and of district 10 of *Cybele Hibernica*, are *Elatine hexandra*, which grows with *Isoetes lacustris* in the lake where *Carex rhynchophysa* is found; *Rubus Borreri*, a great extension of its hitherto restricted range in the South of England; *Crepis biennis*, a colonist at Armagh, where it was first observed by Mr. A. G. More some years ago; *Linaria repens*, sparingly in S. Armagh, six miles N.W. of Killowen, in Co. Down, its only other station in Ulster; *Statice bahusiensis*, abundant in estuary of Newry River; *Potamogeton angustifolius* (*Zizii*) and *P. filiformis*, in Lough Neagh—the latter was in Ireland previously known only in lakes on the west coast; *Scirpus Savii*, estuary of Newry River; *Festuca sylvatica*, woods at Tanderagee; and *Chara polyacantha*, lake and pools at Loughgall, near Armagh. Other additions to the flora, which, though not uncommon plants in England, are very rare or local in Ireland, are *Ranunculus circinatus*, *Fumaria densiflora*, *Diplotaxis muralis*, *Silene noctiflora*, *Lepigonum rubrum*, *Galium Mollugo*, *Chærophyllum temulum*, and *Typha angustifolia*. I had the satisfaction of re-finding several rare plants already recorded from the county; of these, the best were *Barbarea arcuata* and *B. intermedia*, recorded from near Armagh by Mr. More nearly forty years ago, which still flourish in their old stations; and *Lathyrus palustris*, found some years ago by Rev. H. W. Lett on islets at the mouth of the Closet River, in Lough Neagh, where I saw it in abundance, as well as on the banks of the same stream.

IN MEMORY OF ROBERT HOLLAND.

It was in 1865 or 1866 that I made the acquaintance of Robert Holland. I was then studying medicine at High Wycombe, and devoting my leisure to British botany. Being anxious to see as many British plants as possible in a living state, I asked a correspondent, Mr. Leo H. Grindon, if he could send me *Geum rivale*, which did not grow in our neighbourhood. He referred me to Mr. Robert Holland, of Mobberley, who promptly sent me

specimens, with a friendly letter which was the foundation of our subsequent friendship.

Robert Holland, although born at Peckham (on the 2nd of August, 1829), belonged to a well-known Cheshire family—that, indeed, of which Lord Knutsford is a member. His ancestor, William Holland, bought the Dam Head estate in 1650, and from that time until quite recently it has been in the possession of the family: it was there that I first visited him in the autumn of 1868. He had studied agriculture at Cirencester, under Prof. Buckman, and, at his father's death, had settled down to farming. Natural history, and especially botany, was the subject in which he took most interest; but he was a useful man in the village in many ways, and a true friend to its inhabitants. Mr. Leo Grindon and Mr. Joseph Sidebotham were his chief botanical companions, and his help is acknowledged by the former in the *Manchester Flora*, published in 1859. His knowledge of British plants was Benthamian rather than Babingtonian, but for many years he paid considerable attention to teratology, with which subject his few communications to this Journal (1871, 244; 1872, 267; 1882, 282; 1884, 348) were connected.

One result of my visit to Mobberley in 1868 was the most important work with which Mr. Holland's name is associated—the *Dictionary of English Plant-names*. At that time both of us were frequent contributors to *Science-Gossip*, in which periodical one of us had published an article on plant-names, and this was followed by many lists. We thought it would be well to bring these together, and the first announcement of this will be found in this Journal for 1869, p. 32. Our collection grew beyond our expectations, and the work was accepted by the English Dialect Society; but it was not until 1878 that the first part made its appearance, while the third and concluding portion was not published until 1886. It is unnecessary to refer to the amount of labour which a compilation of this kind involves, and Mr. Holland took his full share of it. We have since been engaged upon a Supplement to the work, towards which Mr. Holland had made an important contribution; and it is to be feared that his death will delay its completion.

Mr. Holland had a remarkable knowledge of Cheshire customs, dialect, and folk-lore. He contributed valuable notes to a volume of *Old Country Words* which I compiled for the English Dialect Society in 1880; and in 1885 the same Society published his *Glossary of Words used in the County of Chester*, a great advance on the previous county glossaries, and full of curious information on the customs, popular rhymes and proverbs, legends, and folk-lore of Cheshire. His literary style was remarkable for its simplicity: no one knew better the value of straightforward every-day English as a means of conveying ideas. He frequently lectured in Manchester and elsewhere on popular and scientific subjects connected with natural history, and always succeeded in interesting his audience. He was extremely fond of his garden, and had a good practical knowledge of agricultural matters, on which account he

was appointed consulting botanist and examiner of seeds to the Cheshire Agricultural Society.

In 1875 the prevailing agricultural depression and the expense attendant on bringing up a numerous family compelled Mr. Holland to leave Mobberley. He became agent to Sir Richard Brooke at Norton Priory, near Halton,—one of the places, naturally beautiful, which have been ruined and devastated by the noxious vapours given off by the chemical works of Widnes, that most desolate and hopeless of all manufacturing towns. In 1882 he went to Frodsham, where he remained until his death. He had for some time been suffering from heart disease, and his altered physique had been matter of regret to his personal friends; but there seemed no reason to expect any serious result. But the end came very suddenly. On the 16th of July, Mr. Holland was talking to a signalman on the railway near Acton Grange, when he fell to the ground, and on being raised, life was found to be extinct. Many besides the writer of this notice have lost in Robert Holland a genial companion and a true friend.

JAMES BRITTEN.

MR. J. G. BAKER, F.R.S.

WE trust that it may be very many years before it will become necessary to give in this Journal any estimate of the life-work of Mr. J. G. Baker, and that the record of such work may be far more lengthy than it is at present before it arrives at its close. But we think that many of our readers who have not the happiness of

knowing Mr. Baker personally, will be glad to have a sketch of the portrait by Mr. Joseph W. Forster, exhibited in the Royal Academy Exhibition of this year; and we therefore, by Mr. Blackburn's permission, reproduce the block given in his *Academy Notes*. Mr. Baker was among the contributors to the first number of this Journal, and for thirty years our pages have been enriched by papers from his prolific pen.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 152.)

Peucedanum officinale L. Sp. Pl. 245 (1753). **1562.** "I found a root of it at saynt Vincentis rock a litle from Bristow."—Turn. ii. 83, back.

P. palustre Moench, Method. 82 (1784). **1778.** "In paludibus, prope Doncaster. D. Tofield."—Huds. ii. 115.

P. sativum Benth. & Hook. f. Gen. Pl. i. 920 (1867). **1562.** "Thys wild persnepe groweth pletuously besyde Cābrydge in a lane not far frō Newnā Milles."—Turn. ii. 80, back.

Heracleum Sphondylium L. Sp. Pl. 249 (1753). **1548.** "Groweth in watery middowes."—Turn. Names, G v.

Daucus Carota L. Sp. Pl. 242 (1753). **1562.** "Ye wild carot is foūd abrode in ye feldes."—Turn. ii. 80.

D. gummifer Lam. Dict. i. 634 (1783). **1796.** "I first gathered this plant on the western coast of Cornwall."—Withering in Bot. Arr. ed. 3, 290.

Caucalis daucoides L. Sp. Pl. 241 (1753). **1660.** "In the corn about Kingston wood and elsewhere" (Cambs.).—R. C. C. 31.

C. arvensis Huds. i. 98 (1762). **1666.** "Amongst wheat plentifully neer Petersfield (Hants). Mr. Goodyer, who call'd it *Caucalis pumila segetum*."—Merrett, 24.

C. Anthriscus Huds. i. 99 (1762). **1632.** Johns. Kent, 17. ("Caucalis semine aspero flosculis subrubentibus.")

C. nodosa Scop. Fl. Carn. ed. 2, i. 192 (1772). **1629.** Johns. Kent, 9. "Upon the bankes about S. James and Picadilla."—Ger. em. 1023 (1633).

Hedera Helix L. Sp. Pl. 202 (1753). **1538.** "Hederam greci cisson vocant, angli Ivy."—Turn. Lib.

Cornus suecica L. Sp. Pl. 118 (1753). **1670.** "On the Northwest-end of the highest of Cheviot-hills."—Ray, Cat. 339.

C. sanguinea L. Sp. Pl. 117 (1753). **1548.** "Plentuous in Englande."—Turn. Names, C v.

Adoxa Moschatellina L. Sp. Pl. 367 (1753). **1570.** "In sylvosis et umbrosis frigidiusculis Angliæ."—Lob. Adv. 300.

Sambucus nigra L. Sp. Pl. 269 (1753). **1538.** "Sambucus . . . . ab anglis an Elder tree . . . . vocatur."—Turn, Lib,

S. Ebulus L. Sp. Pl. 269 (1753). **1548.** "Groweth abrode in Cambryge fieldes in great plentie."—Turn. Names, C viij.

Viburnum Opulus L. Sp. Pl. 268 (1753). **1570.** "In . . . Angliæ . . . . pratensibus udis convalliumque."—Lob. Adv. 444.

V. Lantana L. Sp. Pl. 268 (1753). **1570.** "In . . . Angliæ . . . . senticetis & sylvosis passim."—Lob. Adv. 436. "In the chalkie groundes of Kent, about Cobham, Southfleete and Gravesend, and al the tract to Canterburie."—Ger. 1305.

Linnæa borealis L. Sp. Pl. 631 (1753). **1795.** Found by Prof. James Beattie "for the first time in Britain in an old fir wood at Mearns, near Aberdeen," and exhibited at the Linnean Society, 2 June, 1795.—See Linn. Trans. iii. 333.

Lonicera Periclymenum L. Sp. Pl. 173 (1753). **1548.** "Wodbyne is commune in every wodde."—Turn. Names, F ij.

Rubia peregrina L. Sp. Pl. 109 (1753). **1562.** "In the yle of Wyght" and "besyde Wynchester in the way to Southampton."—Turn. ii. 118. "Mr. George Bowles found it growing wilde on Saint Vincents rock and out of the cliffes of the rocks of Aberdovie in Merionethshire."—Ger. em. 1120 (1633).

Galium boreale L. Sp. Pl. 157 (1753). **1670.** "Propè Orton, Winandermere et alibi in Westmorelandia."—Ray, Cat. 268.

G. Cruciata Scop. Fl. Carn. ed. 2, i. 100 (1772). **1597.** "I found the same growing in the Churchyarde of Hampsteed neere London . . . . also it groweth in the Lane or highway beyond Charleton, a small village by Greenwich."—Ger. 965.

G. verum L. Sp. Pl. 107 (1753). **1548.** "Galion . . . . named . . . . in the North countrey Maydens heire."—Turn. Names, D ij, back.

G. erectum Huds. i. 56 (1762). **1762.** "In pascuis montosis humidiusculis."—Huds. *l. c.* "Heydon Common, Norfolk. Mr. Bryant."—With. Bot. Arr. ed. 2, 152 (1787).

G. Mollugo L. Sp. Pl. 107 (1753). **1576.** "Mollugo vulgatior herbariorum . . . . Collibus incultis & cretaceis agrorum marginibus . . . . Angliæ plurima."—Lob. Stirp. Hist. 465.

G. saxatile L. Sp. Pl. 107 (1753). **1634.** "Galium album minus, Tab., in montosis."—Merc. Bot. 37.

G. sylvestre Poll. Fl. Palat. i. 151 (1776). **1762.** "In montibus prope Kendal, in comitatu Westmorelandico."—Huds. i. 57 (*pusillum*).

G. palustre L. Sp. Pl. 105 (1753). **1632.** Johns. Kent, 24.

G. uliginosum L. Sp. Pl. 106 (1753). **1724.** "On the Lower Bog at Chisselhurst. Mr. J. Sherard."—Ray, Syn. iii. 225. "This I found on ye bogs at Hampstead."—Buddle in Sloane Herb. cxxi. fol. 2 and 10 (circ. 1700).

G. anglicum Huds. ed. 2, 69 (1778). **1690.** "Found at Hackney on a Wall," by William Sherard.—Ray, Syn. i. 237 (*Aparine minima*).

G. Vaillantii DC. Fl. Fr. iv. 263 (1815). **1844.** Discovered in Sept. 1844 by G. S. Gibson near Saffron Walden.—Phytol. i. 1123.

G. Aparine L. Sp. Pl. 108 (1753). **1538.** "Anparine . . . . vocatur ab anglis Goosgyrs aut Gooshareth."—Turn. Lib.

G. tricorne Stokes in With. Bot. Arr. ed. 2, 153 (1787). **1663.** In Cambs "Inter segetes passim"—R. C. C. App. iii. 6.

Asperula odorata L. Sp. Pl. 103 (1753). **1568.** "Wood rose or wood rowel . . . . A short herbe of a span long, four square and smal, about ye which growe certaine orders of leaves, certayne spaces goynge betwene, representing some kindes of rowelles of sporres, whereof it hath the name in English."—Turn. Herb. iii. 25. **1597.** "Under hedges and in woods almost everywhere."—Ger. 966.

A. cynanchica L. Sp. Pl. 104 (1753). **1632.** Johns. Kent, 38.

Sherardia arvensis L. Sp. Pl. 102 (1753). **1548.** "A rare herbe whiche I could never see but once in Englande and that was a litle from Syon" (Middx.).—Turn. Names, A vij, back (*Alysson Plinii*). "In Dorsetshire and . . . . about Welles in Summersetshyre."—Turn. i. 36 (1551).

Valeriana dioica L. Sp. Pl. 31 (1753). **1597.** "In moist places hard to river sides."—Ger. 918 (Fig. 917, 3). "In humidis pratis & sylvis."—Johns. Merc. Bot. 76 (1634).

V. officinalis L. Sp. Pl. 31 (1753). **1548.** "About water sydes and in the moyst plasshes," &c.—Turn. Names, F iij.

Valerianella olitoria Poll. Fl. Palat. i. 30 (1776). **1570.** "Sæpe nobis visa et enata in Anglia."—Lob. Adv. 319. **1597.** "Wilde in the corne fieldes."—Ger. 243.

V. eriocarpa Desv. Journ. Bot. ii. 314 (1809). **1865.** "Between Henley Castle and Barnard Green, Worcestershire, collected by Mr. E. Lees . . . . in 1845."—Syme, E. Bot. iv. 244. The plant from the Ormeshead, N. Wales (Hook. Fl. Brit. ed. 1, 16) was *V. dentata*.

V. carinata Lois. Not. 149 (1810). **1835.** "Gathered by Mr. E. Forster at Ongar, in Essex."—Woods in Trans. Linn. Soc. xvii. 433.

V. rimosa Bast. ap. Desv. Journ. Bot. i. 20 (1814). *V. Auricula* DC (1815). **1724.** "In the corn fields between Ore and the foot ferry to Shepey Isle in Kent. Also in the third or fourth field on the right hand of the Road going from London-Coney towards St. Albans in Hertfordshire; Mr. Dale."—Ray, Syn. iii. 201. "Landulph, Cornwall. Rev. R. T. Bree."—Hook. Fl. Br. ed. 3, 24 (1835).

V. dentata Poll. Fl. Palat. i. 30 (1776). **1804.** "Found in Cornwall by Mr. E. Forster, jun., in 1799."—Sm. Fl. Brit. iii. 1385.

Dipsacus sylvestris Huds. i. 49 (1762). **1538.** "Dipsacos latine labrū veneris aut lavacrū veneris dicitur . . . . anglorum vulgus vocant a wylde tasyll."—Turn. Lib.

D. pilosus L. Sp. Pl. 97 (1753). **1570.** "In Anglia Cantia secus vias et suburbia Rhiæ Sandvicium."—Lob. Adv. 374.

Scabiosa Succisa L. Sp. Pl. 98 (1753). **1568.** "The devil's bite . . . Morsus diaboli . . . . groweth abroade in untilled places as in meddowes and plaine feldes."—Turn. iii. 43.

S. Columbaria L. Sp. Pl. 99 (1753). **1629.** "Scabiosa tenuifolia."—Johns. Kent, 3. But see fig. and desc., Ger. 582, 2 (1597).

S. arvensis L. Sp. Pl. 99 (1753). **1568.** "Groweth amongest y^e^ corne."—Turn. iii. 68.

Eupatorium cannabinum L. Sp. Pl. 838 (1753). **1548.** "Groweth about watersydes and hath leaves lyke Hemp."—Turn. Names, H ij, back.

Solidago Virgaurea L. Sp. Pl. 880 (1753). **1570.** "Angliæ . . . . . Septentrionalibus: nemorosis et saltuosis opacis."—Lob. Adv. 125. "In Hampsteed wood," &c.—Ger. 349.

Bellis perennis L. Sp. Pl. 886 (1753). **1538.** "Bellis . . . est illa herba quam vocamus a Dasy."—Turn. Lib. "In Northumberlande men call thys herbe a banwurt."—Turn. i. 31 (1551).

Aster Tripolium L. Sp. Pl. 872 (1753). **1570.** "Scatent . . . hac Norbonica, et Anglica littora & fluminum crepidines."—Lob. Adv. 123. "By the fort against Gravesend" (Kent), &c.—Ger. 333 (1597).

A. Linosyris Bernh. Syst. Verz. Erfurt. 151 (1800). **1813.** "Discovered in September, 1812, by the Rev. Charles Holbech, of Farnborough, Warwickshire, . . . on the rocky cliff of Berryhead, Devon."—E. B. 2505.

Erigeron acre L. Sp. Pl. 863 (1753). **1632.** Johnson, 'Kent,' p. 38 ("Conyza cœrulea acris"). "I first observed it . . . by Farmingham in Kent."—Johnson, Ger. em. 485.

E. alpinum L. Sp. Pl. 864 (1753). **1790.** Found by James Dickson in 1789 on Ben Lawers.—Dicks. Crypt. Fasc. ii. 29; and Trans. Linn. ii. 288.

Filago germanica L. Sp. Pl. ed. 2, 1311 (1762). **1562.** "I have sene the herbe . . . in some places of Englande."—Turn. ii. 11, back (with a figure).

F. apiculata G. E. Sm. Phytol. ii. 575 (1846). **1846.** Found by Rev. G. E. Smith "at Cantley, Rossington, &c., near Doncaster." —Phytol. *l. c.*

F. spathulata Presl, Del. Prag. 99 (1822). **1848.** Found (1843-4) by Mr. G. S. Gibson near Saffron Walden, Essex, and described (as *F. Jussiæi*).—Phytol. iii. 216.

F. minima Fr. Nov. ed. 1, 99 (1822). **1632.** Johnson, 'Kent,' p. 31. "About Gamlingay" (Cambs).—R. C. C. 64 (1660).

F. gallica L. Sp. Pl. ed. 2 1312 (1762). **1696.** "Among corn in sandy grounds about Castle-Heveningham, in Essex, plentifully. Mr. Dale."—Ray, Syn. ii. 85.

Antennaria dioica Gaertn. Fruct. ii. 410, t. 167 (1791). **1641.** "Gnaphalium montanum album."—Johns. Merc. Bot. pars alt. p. 22. "Neer Donkester. Mr. Stonehouse."—How, Phyt. 48 (1650).

Gnaphalium uliginosum L. Sp. Pl. 856 (1753). **1597.** "Upon drie sandie banks."—Ger. 518.

G. sylvaticum L. Sp. Pl. 856 (1753). **1548.** "Centunculus . . . . Chafweede . . . . called in Yorkeshyre cudweede."—Turn. Names, C i. "Tertio a Londino miliari opacæ sylvæ clivus multam alit, cis Tamesim."—Lob. Adv. 202 (1570).

G. norvegicum Gunn. Fl. Norveg. (1772). **1777.** As a variety of *G. sylvaticum*, occurring "upon the highland mountains."—Lightf. Fl. Scot. 472. See Sm. Fl. Brit. ii. 870.

G. supinum L. Syst. ed. xii. 3, 234 (1768). **1777.** "Upon the tops of the highland mountains . . . . Mr. Stuart."—Lightf. Fl. Scot. 471.

Inula Helenium L. Sp. Pl. 881 (1753). **1570.** "In pratis villarum & prædiorum Angliæ."—Lob. Adv. 246. "In the fieldes as you go from Dunstable to Puddlehill," &c.—Ger. 649 (1597).

I. Conyza DC. Prod. v. 464 (1836). **1597.** "In divers places in the West parts of England."—Ger. 647.

I. salicina L. Sp. Pl. 882 (1753). **1865.** Found by Dr. D. Moore, in June, 1843, on the shore of Lough Derg, Co. Galway.—Journ. Bot. 1865, 334.

I. crithmoides L. Sp. Pl. 883 (1753). **1597.** "In the mirie Marsh in the yle of Shepey, as you go from the Kings ferrie to Sherland house."—Ger. 428.

Pulicaria dysenterica Gaertn. Fruct. ii. 461 (1791). **1597.** "In everie waterie ditch."—Ger. 391. "In S. James his Parke, Tuthill fields, &c."—Ger. em. 482 (1633).

P. vulgaris Gaertn. Fruct. ii. 461 (1791). **1570.** "In Benard greyn ara et fossis, altero a Londino lapide."—Lob. Adv. 145. "At Islington by London."—Ger. 391.

Bidens cernua L. Sp. Pl. 832 (1753). **1570.** "In Anglia ubique udorum, præsertim Londoni."—Lob. Adv. 227.

B. tripartita L. Sp. Pl. 838 (1753). **1629.** Johnson, 'Kent,' p. 8 ("Eupatoreum Cannabinum fœm.").

Achillea Millefolium L. Sp. Pl. 899 (1753). **1538.** "Millefolium . . . ab anglis . . . Yarow."—Turn. Libellus.

A. Ptarmica L. Sp. Pl. 898 (1753). **1597.** "In the three great fieldes next adjoining to a village neere London called Kentish towne," &c.—Ger. 484.

Diotis candidissima Desf. Fl. Atl. ii. 261 (1798). **1597.** "At a place called Merezey, sixe miles from Colchester, neere unto the sea side."—Ger. 518.

Anthemis Cotula L. Sp. Pl. 894 (1753). **1597.** "In Corne fields neere unto pathwaies."—Ger. 618.

A. arvensis L. Sp. Pl. 894 (1753). **1713.** "White Ox eye. —Lond. Peckham Fields."—Pet. Hb. Brit. xix. 8.

A. nobilis L. Sp. Pl. 894 (1753). **1548.** "Groweth on Rychmund grene and in Hundsley [Hounslow] heth in great plentie."—Turn. Names, B i.

(To be continued.)

SHORT NOTES.

LATHYRUS TUBEROSUS Linn.—On June 13th I found growing, near Chelvey, Somersetshire, a plant of *Lathyrus tuberosus*. I only noticed one plant, which attracted my attention by its bright carmine flowers. It was not near any dwelling-house or garden.—CECIL H. SP. PERCEVAL.

Hippophae rhamnoides in Somerset.—This occurs in the churchyard on Stert Point, at the mouth of the Parret, below Bridgwater, Somerset, where it was introduced by the Rev. H. A. Daniel by seed from Ireland, some fifteen years ago, as a plant which would stand the extremely exposed situation. On the Point it has not spread beyond the churchyard, where the shrubs are far larger than the Lincolnshire specimens, but it has spread to Burnham Links, the sandhills forming which are immediately across the estuary, and with more than a mile of water between. I found it growing there in a few places, and evidently not long established, in September, 1892; but as it has been recognised by a member of the club who knows its habits on the Lincolnshire sandhills, it will probably be extirpated as most undesirable on the golf links. The seeds must have been carried by birds from the few shrubs at Stert, as there is no land communication for very many miles, and that only in one direction, through Bridgwater itself, and a long barren island in the estuary completely prevents any cross set of current directly from one shore to the other. Fieldfares and thrushes, which feed largely on the yellow berries in hard winters on the east coast, have been the most probable vehicle.—C. W. Whistler.

Azolla caroliniana.—About a week ago I was fortunate enough to find *Azolla caroliniana* fruiting abundantly in the open air, in a friend's garden at Ashford, Co. Wicklow. The plants were received by my friend about two years ago from France, with Nymphæas and other aquatics, and were placed in a pond in the open. They multiplied with great rapidity, and had to be cleared out almost in cartloads, having become a perfect nuisance. Some were recently placed in a shallow, peaty pool, which with the dry weather has been reduced to a few inches in depth of water. Here every well-developed individual is producing microsporangia in abundance; the macrosporangia I have not yet detected.—Greenwood Pim.

Middlesex Plants.—It may be worth noting that *Sagittaria sagittæfolia* and *Potamogeton pectinatus* are both exceedingly abundant this year in the Regent's Canal, near Cumberland Basin, Regent's Park. The locality is not mentioned for either plant in Trimen and Dyer's *Flora of Middlesex*.—Alfred W. Bennett.

Ruppia spiralis in W. Kent.—This species, not given for either division of the county in *Topographical Botany*, was found in ditches at Port Victoria, on June 28th, by Captain Wolley Dod and myself. —Edward S. Marshall.

Eriophorum gracile in Dorset.—During a recent walk from Corfe Castle to Studland, in company with the Rev. E. F. Linton, we came across *Eriophorum gracile* in some abundance. The first specimen, found by Mr. Linton, was growing, as usual, in about two feet of water; a little further along the road, however, I found the plant in considerable abundance in a spongy bog which is usually too soft to bear treading upon, but which during the recent dry season has become sufficiently firm to walk across. The plant

was easily recognisable at a distance by its tall, slender stems and smaller tufts of hairs, which seem regularly truncate at the larger end, like an artist's badger brush. This is, I believe, the first record of the occurrence of the plant in Dorsetshire. On the slope of the chalk down between Corfe Castle and Studland I found the rare moss *Seligeria paucifolia* sparingly on loose chalk stones. This plant has not, I believe, been before recorded for this county. —E. M. Holmes.

Spiranthes Romanzoffiana in Co. Londonderry.—On July 17th I was greatly interested by receiving for identification from my correspondent Mrs. Leebody, of Londonderry, a fresh specimen of *Spiranthes Romanzoffiana*, collected near Kilrea, Co. Derry. In response to a request for particulars respecting this important find, Mrs. Leebody writes:—"On July 15th, while collecting plants on the Derry bank of the river Bann, near Kilrea, I was struck with the appearance of a plant which seemed to be one of the *Habenariæ*. A second glance showed me, however, that it was something with which I was unfamiliar, and I gathered the specimens, of which I saw six in flower, but took only one root. The flowers were most fragrant. The land in the vicinity of the place where I found the plant consists of worn-out and long disused bog, as is proved by the portions of bog-oak projecting into the river. It apparently has been little cultivated, but kept for pasture or meadow." The specimen which Mrs. Leebody sends is a full-grown example, some eight inches in height, and is in every way identical with the plants I found in Co. Armagh last year, except in having a somewhat more lax spike, and leaves with less inrolled margins, both of which characters would be caused by its growing in a less exposed position. The situation in which the plant grows in Derry—old worn-out bog—is precisely similar to that which it affects in Co. Armagh. The new station lies about 48 miles north of the Armagh locality, and both are situated in the watershed of the Bann. The plant should certainly be looked for on the bogs of North Tyrone and West Antrim.—R. Lloyd Praeger.

Juniperus intermedia Schur. in Scotland.—Last autumn Mr. Duncan sent me, from the Island of Scarp, O. Hebrides, five gatherings of specimens of *Juniperus*. At once I saw they included *J. communis* L. and *J. nana* Willd., and the others I suspected to be *J. intermedia* Schur. Lately I have compared these gatherings at Kew with the Austrian Tyrol and Transylvanian plant, and consider they represent the same form. Wettstein (*Sitzb. Wien Akad. math. nat.* xcvi. p. 333 (1887)) considers it to be *communis* × *nana*; this may be, but it fruits freely, and I should be more inclined to put it as a variety to *communis*, as Nyman does in his *Conspectus Fl. Europ.* p. 676 (1881).—Arthur Bennett.

Dumontia filiformis var. (p. 167).—In Mr. Harvey Gibson's paper on New Zealand Algæ apropos of *Dumontia filiformis* (Lynb.) Grev. var.? the following sentence occurs:—"Prof. Schmitz, to whom I sent a specimen, gave it as his opinion that it was near *Nemastoma*." Mr. Gibson wishes us to state that he misunderstood

Prof. Schmitz's remarks on the specimen sent him, and that the sentence ought to read:—"Prof. Schmitz, to whom I sent a specimen, gave his opinion on it in the following words:—'Der Thallusbau erinnert sehr an *Nemastoma? palmata*, Harv. Phyc. Aust. 262, so dass wohl beide Arten zu derselben Gattung gehören dürften, doch gehören sie meines erachtens keinenfalls zu *Nemastoma*.'" (The structure of the thallus reminds one very much of *Nemastoma? palmata* Harv. Phyc. Aust. 262, so that both species might very well belong to the same genus, but in my view they do not by any means belong to *Nemastoma*.)

NOTICES OF BOOKS.

Beiträge zur Morphologie und Physiologie der Pflanzenzelle. Herausgeg. von Dr. A. Zimmermann. 8vo. Bd. I. pp. 322; with 5 plates and 23 figures in the text. Tubingen, 1893. H. Laupp. 14s.

The volume now before us contains fifteen communications, of various lengths, on the microscopic structure and contents of the plant-cell. For the greater number Dr. Zimmermann himself is responsible. Thus of the three "Hefts," Nos. I. and II. are entirely his, while of the seven articles in No. III. he contributes four and C. Correns two, a shorter one on the alga *Apiocystis Brauniana* Naeg., and a longer on the minute structure of the membrane in the *Chlorophyceæ* and *Florideæ*. Finally, K. Schips has a note on some cuticular formations in the epidermis of the fruit of the liliaceous plant, *Rohdea japonica*.

The book begins with a brief historic note on plasma connection, in which Dr. Zimmermann points out that while we owe the first published account to Tangl, it is evident from some notes and drawings found at Tubingen among Hofmeister's effects, that the latter botanist had previously observed the perforation of the pit-closing membrane in the endosperm. The author thinks it an act of piety to make this more generally known, and therefore exactly reproduces Hofmeister's figures of sections of the endosperm of *Phytelephas macrocarpa* and *Raphia tædigera*.

This is followed by some facts about leucoplasts. In species of *Tradescantia* and *Zebrina* these bodies are not homogeneous, as has hitherto been supposed, but contain spherical bodies in greater or less quantity, which are designated provisionally "*Leukosomen*."

Leucosomata, according to present knowledge, are, however, not widely distributed. The author finds them in the epidermis, mechanical tissue, and parenchyma of the leaf-trace bundles, but not of the cauline, of *Tradescantia albiflora*, *T. discolor*, and *Zebrina pendula*, whereas in the common species of *Tradescantia* and *Commelina* the leucoplasts are homogeneous, and never contain leucosomata. He thinks they are of proteid nature, standing as regards function in the same category with the crystalline proteid

contents of the chromatophore, the physiological significance of which is, however, not yet clear. Experiments only gave negative results. Absence of light had no effect; after fifteen days of darkness a plant of *Tradescantia albiflora* showed no alteration in the form or size of the leucosomata, and cultures in solutions, both rich and poor in nitrogenous food-stuff, were equally barren of result.

In the third article, on the chromatophores in chlorotic leaves, the same observer shows that such leaves always contain sharply defined chromatophores which on treating with iron solution become chloroplasts, growing considerably as well as becoming green. In the case of strong chlorosis it was often only possible to make out the chromatophores by aid of suitable stains. As regards capacity for breaking up carbonic acid and forming starch, he finds that in relatively strong chlorosis the chromatophores are not only unable to assimilate the carbonic acid of the atmosphere, but will not even form starch when supplied with a sugar solution; at any rate, will only do so in a very limited degree.

The fourth article deals with the demonstration, properties, distribution and function of the granula, a new structure discovered in the assimilation tissue when investigating the leucoplasts of *Tradescantia discolor*, and revealed by subsequent research in very many other plants of the most diverse families. The granula is spherical in form, or, in one case, the young leaves of *Polypodium irioides*, drawn out into rod-like structures. In size it is considerably smaller than the chloroplasts, but varies according to the species within wide limits, and is often so small that very good objectives are necessary for its detection. The number in a cell is also very variable, and the position is not the same in all cases; rarely are they regularly distributed over the whole primordial utricle, but mostly occur near the chromatophores, or sometimes heaped up round the nucleus. From a few observations on the chemical reaction Dr. Zimmermann thinks the granula must consist only of proteids. It is of very wide distribution, occurring in many families of Dicotyledons and Monocotyledons, in *Cryptomeria elegans* among the Coniferæ, *Ceratozamia mexicana* among the Cycads, and in five genera of true ferns. Its presence in the mosses is uncertain, and in algæ containing pyrenoids it could not be found. The only other alga investigated was a species of *Chara*, where large roundish clumps were found in the streaming cytoplasm, which from their considerable size and abnormal form are probably not identical with the granula. As regards function, its wide distribution seems evidence of its importance in the chemistry of the organism, probably in connection with the formation or travelling of proteid.

These few remarks will give the reader some idea of the contents of this interesting volume. For the rest we will only say that in two articles Dr. Zimmermann discusses the protein crystalloid, its occurrence in various parts of the cell, and its distribution through the plant kingdom; and in other two the growth of the cell-wall. He also contributes short articles on oil-plastids; on some cystolith-like swellings of the cell-wall in the epidermis of *Cyperus alternifolius*, composed of silica and cellulose; and on the

secretion of sphæroids of calcium phosphate in the cells of an undetermined species of *Cyperus*.

We may add, in conclusion, that the text and illustrations are in every way satisfactory.

A. B. Rendle.

British Forest Trees and their sylvicultural characteristics and treatment. By John Nisbet, D. Œc., of the Indian Forest Service. Macmillan & Co. Pp. 352, 8vo. Price 6s. net.

Dr. Nisbet is undoubtedly justified in the suggestion in the Preface to this work that sylviculture is as yet but little understood in Britain. It may also be inevitable that such a work must at present "be, to a considerable extent, a compilation from the best German sources," and not "based on long experience in the treatment of forests in Britain"; but we are hardly prepared to admit that "fifteen years' active service in the teak forests of tropical Burma" is an altogether relevant test of the correctness of the scientific principles enunciated in Germany for the treatment of woodland in this country.

The author's two main contentions are, "*firstly*, that in general the plantations are not quite so dense as they should be in order to attain the utmost outturn and the best development producible by the soil; and *secondly*, that the importance of underplanting for the protection and improvement of the productive capacity of the soil is either not recognised, or at any rate not practically given effect to." These opinions he maintains, though "taking into consideration the damper insular climate of Britain, in which the soil is not so likely to deteriorate as on the inland forest tracts of the Continent."

Even "the best German sources" of information seem anything but infallible, judging from the statements (p. 2) that the hornbeam was "introduced before the end of the fifteenth century," the juniper and the holly "during the sixteenth," and the maple and buckthorn "during the seventeenth"; that England and Wales are "the richest countries in coal in the whole world" (p. 9); and that "ash, maple, sycamore and elm, require a moderate quantity of lime in the soil, and beech, hornbeam, oak, as also larch and Austrian pine, thrive best on soils that have at least some lime in their composition" (p. 31).

The book contains much valuable matter as to the requirements, treatment and dangers of each of our forest trees, though it might have been more convenient if this part of the work had been subdivided into chapters. There is, however, one important practical matter to which, although not purely botanical, we feel bound to refer, *viz.*, that the author, after very rightly laying down in his Preface the principle that sylviculture in Britain should rest on a sound financial basis, strongly advocates the planting of spruce. He does so apparently on the purely theoretical ground of its rate of growth in cubic contents; but we cannot help suspecting that he is thinking of a soil somewhat superior to that usually devoted to woodland in England. What is, however, a more vital objection

to his proposal, on his own principle, is the difficulty in finding a market for spruce timber. Where larch, Douglas fir, pine, or even silver fir can be grown, spruce would probably be as neglected as as it now is in Sweden.

Dr. Nisbet does not put forward his work as an elementary manual for students, but "for the use of landowners and of those already engaged in practical forestry," and such readers will find much in it which is useful and suggestive, whilst their insular conservatism will no doubt prevent them from accepting his conclusions in too wholesale a manner.

G. S. Boulger.

Bulbous Irises. By Prof. Michael Foster, Secretary R.S., &c. 8vo, 85 pages, 58 woodcuts. Published by the Royal Horticultural Society, 117, Victoria Street, S.W. 5s.

We now know a great deal more about the bulbous Irises than we did when I monographed them in this Journal more than twenty years ago. And we may say about Irises emphatically what holds good more or less for all petaloid monocotyledons, that all descriptions of species drawn up from dried specimens require to be corrected and amplified from the study of the living plant. Twenty-nine species (counting *nepalensis* and *tuberosa*) are now known, against fourteen in 1871. They inhabit the Mediterranean and Oriental regions, extending into Central Asia and the north of India. They have now nearly all been brought into cultivation and several of them are very ornamental. There were two splendid beds of *Iris Xiphion* in flower at Kew this summer near the Cactus-house, showing great variety of colour, and the thousand bulbs only cost eight shillings; and two similar beds of *Iris xiphioides*, which flowered a fortnight later and only cost double the price of the others.

Professor Foster gives first a popular account of the different species and their cultural requirements, and afterwards a botanical synopsis of their distinctive characters and a clavis. He gives a great many woodcuts of the flowers, and in the synopsis dissections of each species, showing the shape of the style-branches and perianth-segments, so that altogether the little book is a complete handbook for the group, suited for the needs either of the botanist or the cultivator. It is published by the Royal Horticultural Society and sold at half-price to the Fellows; but as it will not be included in the Journal of the Society, all who want it will have to make special application at the office, which is not a very convenient plan of publication. In including *nepalensis* and *tuberosa* Professor Foster writes:—"If a garden definition of a bulb be wanted, we may perhaps say it is a specially-fed bud which separates from the mother stock, in order to live an independent existence." This of course comprehends far more than botanists include under the term. There is no date on the title-page—an omission which seems to be becoming frequent.

J. G. B.

ARTICLES IN JOURNALS.

Annals of Botany (June). — D. H. Campbell, 'Development of *Azolla filiculoides*' (3 pl.). — J. G. Baker, 'Synopsis of Genera and Species of *Museæ*.' — P. Groom, '*Dischidia Rafflesiana*' (1 pl.).— D. H. Scott & E. Sargant, 'Pitchers of *D. Rafflesiana*' (2 pl.).— H. T. Brown & G. H. Morris, 'Chemistry and Physiology of Foliage-leaves.' — W. B. Hemsley & A. Zahlbruckner, 'The genus *Trematocarpus*.'

Bot. Centralblatt. (Nos. 27–30).—St. J. Golinski, 'Zur Entwicklungsgeschichte des Andrœceums und des Gynæceums der Gräser.' —A. Hausgirg, 'Ueber Gomont's 'Monographie des Oscillariées.''

Bot. Gazette (June 20).—J. D. Smith, 'Undescribed Plants from Guatemala' (3 pl.).—R. H. True, 'Development of the Caryopsis' (3 pl.).—G. F. Atkinson, 'Biology of organism causing leguminous tubercles' (cont.). — B. L. Robinson & H. E. Seaton, *Allium Hendersoni* & *Calochortus ciliatus*, spp. nn.

Botanical Magazine (Tokio). — (June 10). R. Yatabe, *Eria luchuensis*, sp. n.

Bot. Zeitung (July 16).—L. Jost, 'Ueber Beziehungen zwischen der Blattentwickelung und der Gefässbildung in der Pflanze' (1 pl.).

Bull. Soc. Bot. de Belgique (xxxi., 2nd fasc. 2: July 6). — T. Durand & H. Pittier, 'Primitiæ Floræ Costaricensis.' — P. Nypels, 'Tubercules d'*Apios tuberosa* et *Helianthus tuberosus*.' — (xxxii., part 2). — F. Renauld & J. Cardot, 'Musci Exotici novi vel minus cogniti.' — P. Clerbois et A. Mansion, '*Phascum Floerkeanum* en Belgique.' — F. Crépin, 'L'obsession de l'individu dans l'étude des Roses.' — C. H. Delagne, '*Lejeunea calcarea* & *L. Rosettiana*.' — T. Durand, 'Charles Antoine Strail' (d. Mar. 25). — Id., 'Alphonse DeCandolle.'—L. Errera, 'Fréderic Christian Schübeler' (d. 1892).

Bull. Torrey Bot. Club (June). — W. W. Bailey & J. F. Collins, 'Flora of Block Island.' — J. F. Collins, 'Rhode Island Flora.'— S. E. Jelliffe, 'Plants in Ridgewood Water Supply, Brooklyn.'— B. D. Halstead, 'Identity of Anthracnose of Bean and Watermelon.'—T. C. Porter, *Aster leiophyllus*, sp. n. (1 plate).

Erythea (July). — J. B. Ellis & B. M. Everhardt, 'New Californian Fungi.' — E. L. Greene, 'Novitates Occidentales.' — S. B. Parish, 'New Station for *Notholæna tenera*.'—O. Kuntze, 'Remarks on the Genoa Congress.'

Gardeners' Chronicle (June 24). — *Coelogyne Clarkei* Kranzlin, sp. n. — (July 1). S. P. Oliver, 'Pierre Poivre' (1719–86). — (July 8). M. C. Cooke, 'Anthracnose of the Vine.' — (July 15). *Epidendrum Wendlandianum* Kranzlin, sp. n.—(July 22). *Aglaonema rotundum* N. E. Br., *Caladium venosum*, N. E. Br., *C. rubescens* N. E. Br., spp. nn.

Journal de Botanique (June 16). — C. Flahault, 'Alphonse De Candolle.' — E. Belzung, 'Nature des Sphérocristaux des Euphorbes cactiformes.' — E. Bonnet, 'Plantes de Tunisie.' — N. Patouillard, 'Une forme radicicole de l'*Urocystis Anemones*.' — (July 1, 16). L. Guignard, 'Sur le développement de la graine' (cont.). — F. Jadin, '*Dobinea* et *Podoon*.' — H. Hua, *Mocquerysia* (n. gen.) *multiflora* (Bixineæ).

Notarisia (No. 3).—P. Pero, 'Di alcuni fenomeni biologici delle diatomee.'

Nuov. Giorn. Bot. Ital. (July 1). — A. Baldacci, 'La stazione delle' doline.'—E. Baroni, '*Rohdea japonica*.'—S. Sommier, 'Flora della regione Obiense inferiore.'

Oesterr. Bot. Zeitschrift (July). — J. Wiesner, 'Versuch einer Bestimmung der unteren Grenze der heliotropischen Empfindlichkeit nebst Bemerkungen zur Theorie des Heliotropismus.' — R. v. Wettstein, 'Ueber Pflanzen der österreichisch-ungarischen Monarchie.' — H. Zukal, 'Mykologische Mittheilungen' (1 pl.).— R. H. Franzé, 'Ueber einige niedere Algenformen.'

BOOK-NOTES, NEWS, &c.

The first three parts of *The Genus Masdevallia*, by the Marquess of Lothian and Miss Woolward, have already been noticed in this Journal. Part iv., which has just appeared, derives additional interest from the fact that it contains a species which is not only new to science, but, from its large and brightly coloured flower, and general striking appearance, will doubtless prove of horticultural value. There is some doubt as to its native locality, as it was purchased from Mr. Bull under the name of *M. elephanticeps*, which it closely resembles in foliage, though the flowers are quite distinct. It was probably imported along with Mr. Bull's specimens of *elephanticeps* from Ocaña, in the province of Santander, in Colombia. The delicate fragrance of the flower—an uncommon characteristic in the genus—has suggested the name *M. fragrans* for the plant. Another species, unknown in Europe either as living plants or dried specimens, is *M. aristata* Rodriguez. Senor Barbosa Rodriguez discovered this species in the province of Minas Geraes, and has kindly sent Miss Woolward his drawings intended for future publication in his *Monographie des Orchidées du Brézil*. The other species described and figured are *M. abbreviata*, *floribunda*, *guttulata*, *ionocharis*, *melanopus*, *militaris*, *racemosa*, and *xanthina*.

A correspondent has pointed out that the *Outline Classification of the Vegetable Kingdom* issued by the Owen's College, to which we alluded last month, besides being based on a very unsatisfactory system of classification, positively teems with misprints. Among the families of Cryptogams named are the following:—Botrydeæ, Perenosporaceæ, Anthoscerotaceæ, Schizacaceæ, Cyothaceæ, Marsilaceæ; while flowering plants are credited with such orders as Nymphaceæ, Lygophylleæ, Canelaceæ, and Saliniceæ. The handbook bears the name of Prof. Williamson's successor in the chair of Botany at Owen's College, Mr. F. E. Weiss.

The June number of the *Kew Bulletin* appeared in the latter half of July, and was followed by a double number for April and May. Considering that, on the high authority of the *Times* newspaper, "the publication of the *Bulletin* is one of the most useful functions" of Kew, it is unfortunate that more care is not taken to ensure its regular appearance. The numbers before us contain very little matter of botanical interest.

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BIOGRAPHICAL INDEX

OF

BRITISH AND IRISH BOTANISTS

BY

JAMES BRITTEN, F.L.S., & G. S. BOULGER, F.L.S.

THIS INDEX, which has been published in the 'Journal of Botany' during the last four years, has elicited general interest. It originated in the supposition that the want of such a reference-list, often felt by the authors, might also be shared by others; and the numerous expressions of interest and approval have fully justified the belief.

Numerous additions to the information given in the Journal have been made, and some corrections. The list of names has also been considerably extended, and has been brought down to the end of 1892.

The plan of the work, as readers of the 'Journal of Botany' will be aware, has been to be liberal in including all who have in any way contributed to the literature of the science, who have made scientific collections of plants, or who are known to have otherwise assisted in the progress of Botany, exclusive of pure Horticulture. Where known, the name is followed by the years of birth and death, and in other cases an approximate date is given. Then follows the place and day of birth and death, the place of burial, chief titles, dates of election to the Linnean and Royal Societies, or chief University degrees. In conclusion, reference is made to the chief sources of further information, in which Pulteney, Rees, Pritzel, Jackson, and the Royal Society's Catalogue are first quoted, and then the fullest known record, with a note of any portrait and of genera dedicated to the various persons catalogued, or, in the absence of genera, of species. The book comprises about 2000 names.

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BRITISH AND FOREIGN.

EDITED BY

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SENIOR ASSISTANT, DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY), SOUTH KENSINGTON.

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SHROPSHIRE MOSSES.

By R. de G. Benson.

This provisional list of Shropshire Mosses is compiled from the collections being made by Mr. W. P. Hamilton, of Shrewsbury (H.), Mr. A. W. Weyman, of Ludlow (W.), and myself (B.). I have also incorporated a number of species from a list of mosses of the Wrekin district, compiled by Mr. R. Anslow, and published in the *Transactions of the Severn Valley Naturalists' Field Club* for 1870 (A.), and a few species collected at Bridgnorth by Miss Sparkes in 1878 (S.). Localities are given for all but the common species under the numbers of the botanical districts adopted by the Caradoc Field Club. The nomenclature is that of the *London Catalogue*, ed. 2.

Of the 226 species and 20 varieties of British Mosses in this list, 19 do not appear in the *London Catalogue* as recorded for any of the six counties, including Salop, which are comprised in the Watsonian Province 5. These are—*Andreæa petrophila*, *A. Rothii*, *Rhabdoweissia fugax*, *Dichodontium flavescens*, *Dicranum fuscescens*, *Grimmia contorta*, *G. montana*, *Racomitrium protensum*, *Orthotrichum rupestre*, *Tetroplodon bryoides*, *Splachnum ampullaceum*, *Orthodontium gracile*, *Webera elongata*, *Bryum alpinum*, *Pogonatum alpinum*, *Fissidens fontanus*, *F. osmundioides*, *Cinclidotus riparius* (Mr. Weyman's discovery of which is recorded in *Journ. Bot.* 1891, 53), *Neckera crispa*, and *Hypnum cupressiforme* var. *ericetorum*.

It is hoped that continued research will make the list worthy of so interesting a county. I shall be glad to hear of further records and discoveries.

Dr. Braithwaite, Mr. J. E. Bagnall and others have rendered generous help on several occasions in the identification of species, and their kindness is hereby acknowledged. I owe special gratitude to Dr. Gowers for his assistance in my bryological studies.

Sphagnum acutifolium Ehrh. 4. Bomere (in fruit); H. Stiperstones; B. 5. Stapeley Hill (in fruit); H. & B. 8. Cothercot and Wilderley (in fruit); B. 9. Longmynd; Shelve; B. 10. Brown Clee Hill; W. 11. Wrekin; A. — Var. *α. rubellum*. 9. Longmynd; B.

S. fimbriatum Wils. 7. Whixall Moss; B.

S. squarrosum Pers. 4. Stiperstones; B. 8. Marl-pits, Pulverbach; Wilderley (in fruit); B. 9. Longmynd; B.

S. intermedium Hoffm. 4. Stiperstones; B. 8. Wilderley Green (in fruit); H. & B. 9. Longmynd; Stapeley; B. 10. Brown Clee Hill; W.

S. cuspidatum Ehrh. var. *plumosum* Nees, Hornsch. 7. Whixall Moss; B.

S. subsecundum Nees. 4. Shomere Pool; H. 9. Longmynd; B. — Var. *contortum* Schultz. Frequent. — Var. *obesum*. 9. Near Ratlinghope; B.

S. papillosum Lindb. 7. Whixall Moss; B. 8. Wilderley Hill; B. 9. Shelve Hill; H.

S. cymbifolium Ehrh. Frequent. — Var. *squarrosulum* Nees. 7. Haughmond Hill; H. 8. Wilderley Green; B.

Andreæa petrophila Ehrh. 5. Stapeley; H. & B. 10. Brown Clee Hill; W. Titterstone Clee Hill; H.

A. Rothii W. & M. 13. Wrekin; A. (in *Severn Valley Trans.* 1870); B. (Sept. 1892).

Systegium crispum Hedw. 11. Osbaston; A.

Gymnostomum tenue Schrad. 4. Emstry Rough; H.

G. microstomum Hedw. 4. Near Shomere Pool; H. Near Oaks Hall; B. 7. High Ercall and Poynton; A. 8. Pulverbach; B. 9. Priors Halton, Ludlow; W. 10. Ashford; W.

Weissia viridula Brid.

W. mucronata B. & S. 8. Clay-pit near New House, Pulverbach; B.

W. cirrhata Hedw.

Rhabdoweissia fugax Hedw. 4. Stiperstones; B. 9. Light Spout; B.

Cynodontium Bruntoni B. & S. 4. Oaks Wood; Pontesford Hill; B. Lyd Hole; H. 7. Haughmond Hill; H. 11. Lawrence Hill; A.

Dichodontium pellucidum L. 4. Lyd Hole; Skin Mill (in fruit); B. 8. Church Stretton; H. 9. Marshbrook; B. Whitcliffe Wood; W.—Var. *serratum* (*D. flavescens* Dicks.). 4. Lyd Hole; B. 8. Church Stretton; H.

Dicranella Schreberi var. *elata* Schimp. 8. Church Stretton; H.

D. squarrosa Schrad. 4. Stiperstones; B. 8. Church Stretton; H. Wilderley and Cothercot Hills; B. 9. Longmynd (in fruit); B. 10. Titterstone; W.

D. cerviculata Hedw. 4. Bomere; H. 7. Whixall; B. 11. Wrekin; A.

D. varia Hedw.

D. rufescens Turn. 8. Cothercot Hill; Broomhill; Pulverbach; B.

D. heteromalla Hedw.

Dicranum fuscescens Turn. 4. Stiperstones; B. Nr. Lyd Hole; H.

D. scoparium L. Frequent.—Var. *orthophyllum*. 8. Frodesley Lodge Hill; B.—Var. *turfosum* Milde. Brown Clee Hill; W.

D. majus Turn. 4. Oaks Wood; Vessons; B. 8. Church Stretton; W. 9. Whitcliffe Wood; W. 11. Arkoll; A.

D. palustre Bry. Brit. (*D. Bonjeanii* De Not.). 4. Shomere (in fruit); H. Stiperstones; B. 8. Wilderley Green; B. 9. Longmynd; B. 10. Bromfield; W. 12. Titterstone; W.

Campylopus flexuosus L. 4. Nr. Lyd Hole; Lord's Hill; H. Radleth; Vessons (in fruit); B.

C. fragilis B. & S. 4. Shelton Rough; H. 12. Titterstone Clee Hill; W.

C. pyriformis Brid. 4. Bomere; H. 8. Nr. Light Spout; B. 11. Wrekin; A.

Leucobryum glaucum Hampe. 4. Bomere (in fruit); A. Shomere; H. Oaks Wood; B. 7. Hawkstone Park; B.

Pleuridium nitidum Hedw. 2. Racecourse; H. 8. Broomhill; Pulverbach; B. 10. Tinker's Hill; W.

P. subulatum L.

P. alternifolium Kaulf. 4. Nr. Shomere Pool; H. Nr. Oaks Hall; B. 11. Lilleshall; A.

Sphærangium muticum Schreb. 4. Nr. Underdale; H. 7. Nr. Roden; A.

Phascum cuspidatum Schreb. Frequent. — Var. *Schreberi*. 8. Castle Pulverbach; B.

P. bryoides Dicks. 11. Arkoll Wood; A.

Pottia minutula Schwg. 4. Nr. Sharpstones; H. 8. Pulverbach; B. 10. Nr. Huck's Barn, Ludlow; W.

P. truncata L.

P. intermedia Turn. 4. London Road; H. 8. Pulverbach; B.

P. Wilsoni Hook. 8. Pulverbach; B.

P. lanceolata Dicks. 11. Steeraway; A.

Didymodon rubellus B. & S.

D. luridus Hornsch. 4. Shelton Rough; H.

D. flexifolium Dicks. 7. Grinshill; H.

D. sinuosus Wils. 10. Hope Gutter; W.

Eucladium verticillatum L. 10. Hope Gutter (in fruit); W.

Ditrichum homomallum B. & S. 4. Hunter's Wood; Vessons; B. 8. Broomhill; B. 9. Ratlinghope; B. Whitcliffe Wood; W.

D. flexicaule Sch. 11. Steeraway; A.

Trichostomum tophaceum Brid. 7. Haughmond Hill; H. 10. Hope Gutter; Woofferton; W.

Barbula aloides Koch. 4. Shelton Rough; H. 8. Pulverbach; B. 9. Norbury; B. 10. Woofferton; Ludlow; W.

B. muralis L. Common.—Var. *æstiva* Brid. 7. Quarry; H.

B. unguiculata Dill.

B. fallax Hedw.

B. rigidula Hedw. 8. Pulverbach; B.

B. spadicea Mitt. 4. Pontesford; *W. Phillips*. 10. Ludlow; W.

B. cylindrica Tayl. 4. Lyd Hole; B. 10. Titterstone; W.

B. vinealis Brid. 4. Lyd Hole; B.

B. Hornschuchii Schultz. 4. Monkmoor Coppice; H. 8. Pulverbach; B. 9. Norbury; B.

B. convoluta Hedw.

B. subulata L.

B. lævipila Brid. 8. Church Stretton; H. Pulverbach; B. 9. Marshbrook; B. 11. Crudgington; A.

B. latifolia B. & S. 4. Shelton; Sutton; H. 9. Halton Lane; W.

B. ruralis L.

B. intermedia Brid. 7. Haughmond Abbey; H. 8. Pulverbach; B. 10. Wigley; W.

B. papillosa Wils. 9. Prior's Halton; W.

Ceratodon purpureus L.

Encalypta vulgaris Hedw. 9. Norbury; B. 11. Leegomery; A. 12. Bridgnorth; S.—Var. γ. *obtusifolia* Braith. 10. Whitton Court; W.

E. streptocarpa Hedw. 4. Gatten's Lodge; B. 7. Sundorn; H. 8. Longden Wood; B. Church Stretton; W. 10. The Heath; Woofferton; Henley; W. 13. Steeraway; A.

Grimmia apocarpa L. 4. Lyd Hole; B. Sharpstones; H. 5. Stapeley Hill; H. & B. 7. Haughmond Hill; H. 8. Church Stretton; H. Pulverbach; B. 9. Bridges; Wentnor; B. 10. Woofferton; Knowle Gate; W. 11. Steeraway; A.—Var. *gracilis*. 4. Lyd Hole; H.

G. pulvinata Dill.

G. contorta Wahl. (*G. incurva* Br. M. Fl.). 10. On the granite, Titterstone Clee Hill; *Rev. A. Ley*, 25 May, 1893. This has been verified by the Rev. C. H. Binstead.

G. trichophylla Grev. 4. Longden (in fruit); B. 7. Haughmond Abbey; H. 8. Pulverbach (in fruit); B. 11. Hodnet Churchyard; H. 12. Titterstone; W.

G. montana B. & S. 13. Wrekin; B. Verified by Rev. C. H. Binstead.

Racomitrium aciculare L. 4. Lyd Hole; B. 8. Pulverbach; B. Church Stretton; H. 9. Wentnor; B. 10. Titterstone; W. 12. The Knowle; W.

R. protensum A. Braun. 4. Radleth; B. 8. Castle Pulverbach (dwarfed form on boulder stone); B.

R. heterostichum Hedw.

R. fasciculare Schrad. 8. Pulverbach; B. 10. Titterstone; H. 11. Wrekin; A.

R. lanuginosum Brid. 4. Lyd Hole; Oaks Wood; Stiperstones; B. 8. Broomhill; Cothercot; B. 10. Titterstone; H. Brown Clee; W. 11. Steeraway; A. 12. Titterstone; W.

R. canescens Hedw. 7. Haughmond Hill; H. 8. Cothercot Hill; B. 9. Longmynd; B. 10. Titterstone; H. 12. Bridgnorth; S.—Var. *ericoides* Bry. Eur. 12. Titterstone; W.

Ptychomitrium polyphyllum B. & S. 4. Oaks Wood; B. 8. Broomhill; Church Stretton; B. 9. Bridges; Norbury; B. 11. Steeraway; A. 12. Bridgnorth; S.

Amphoridium Mougeotii B. & S. 4. Brook under Pontesford Hill; B. 8. Church Stretton; H. 13. Wrekin; A.

Zygodon viridissimus Brid. 4. Shelton Rough (in fruit); H. Lyd Hole; H. 8. Buildwas; Wenlock; A. 9. Whitcliffe Wood; W. 10. Hope Gutter; W.

Ulota crispa Hedw. 8. Hayes Coppice; B. 13. Wrekin; A.

U. crispula Bruch. 9. Whitcliffe Wood; W.

Orthotrichum saxatile Brid. vel Schimp. B. M. F. 8. Rockery, Pulverbach; B.

O. cupulatum Hoffm. 7. High Ercall; A. 11. Osbaston; Walcot; A.

O. rupestre Schleich. 9. Longmynd; B.

O. affine Schrad.

O. diaphanum Schrad.

O. Lyellii H. & T. In fruit:—9. Nr. Cold Hill; B.

O. leiocarpum B. & S. 8. Smethcot Dingle; H.

O. Sprucii Mont. 4. New Park, Shrewsbury; H.

Tetraplodon mnioides L. 10. In depression between masses of granite on Titterstone Clee Hill; *Rev. A. Ley*, 25 May, 1893.

Splachnum ampullaceum L. 4. Stiperstones; B.

Ephemerum serratum Schreb. 11. Wrockwardine; A.

Physcomitrella patens Hedw. 2. Racecourse; H. 4. Mare Pool; H. 9. Nr. Craven Arms; *Mr. Stone*. Nr. Burway; W.

Physcomitrium pyriforme L. 4. Lincroft Pool; B. Underdale; H. 8. Pulverbach; B. 9. Priors Halton; W. 11. Leegomery; A.

Entosthodon ericetorum C. Muell. 7. Haughmond Hill; H. 8. Church Stretton; H.

Funaria fascicularis Dicks.

F. hygrometrica L.

Bartramia ithyphylla Brid. 8. Ragleth; H. Light Spout; B. 9. Nr. Brickhouse; W.

B. pomiformis L.

Philonotis fontana L.

P. calcarea B. & S. 5. Stapeley Hill (abundant male flowers); H. & B. 8. Cothercot Hill; B.

Breutelia arcuata Dicks. 9. Longmynd; Shelve; B. 10. Titterstone; W.

Orthodontium gracile Wils. 7. Hermitage Farm, Hodnet; H.

Leptobryum pyriforme L. 2. Pritchard's Nursery; H. 10. Riverdale; W.

Webera elongata Hedw. 7. Bury Walls, Hawkstone; H. 9. Whitcliffe; W.

W. nutans Schreb.

W. carnea L. 4. Shelton Rough; Belvidere Wood; H. 8. Marl-pits, Pulverbach; B. 9. Nr. Burway. 10. Tinker's Hill; W.

W. albicans Wahl.

Bryum pendulum Hornsch. 10. Hayton's Bent; W. 8. Church Stretton; H.

B. inclinatum Swartz. 4. Stapeley Hill; H.

B. intermedium W. & M. 4. Nr. Belvidere House; H. 10. Woofferton; W. 11. Ellerdine Common; Limekiln Wood; Arkoll; A.

B. bimum Schreb. In fruit:—2. Hencote Pool; H. 4. Lincroft Pool; B. Near Redhill; H.

B. atropurpureum W. & M. = *erythocarpum* Brid. 4. Cemetery; H. 7. Haughmond; H.

B. alpinum L. 8. Church Stretton; H.

B. cæspiticium L.

B. argenteum L.

B. capillare L.

B. pallens Swartz. 4. Nr. Lyd Hole; B. 8. Cothercot Hill; B. 9. Minton Beach; B. 10. Brown Clee; W. 11. Arkoll; A.

B. pseudotriquetrum Hedw. 8. Light Spout Valley; H. 9. Minton Beach; B. Shelve; H. 10. Woofferton; W. 12. Titterstone; W.

B. roseum Schreb. 7. Haughmond Hill; H. 11. Hollybush Lane; Cold Hatton Common; Arkoll Hill; A. 12. Bridgnorth; S.

Mnium affine Bland. 9. Minton Beach; B. (male flowers only).
M. undulatum Hedw. 4. Oaks Wood (in fruit); B.
M. rostratum Schrad.
M. hornum L.
M. serratum Schrad. 10. Banks of River Ledwych; W.
M. stellare Hedw. 4. Lyd Hole; H. 9. Whitcliffe Wood; W. 12. Bridgnorth; S.
M. punctatum Hedw.
M. subglobosum B. & S. 5. Stapeley Hill; B. 8. Wilderley Green; B. 12. Titterstone; W.
Aulacomnium androgynum L.
A. palustre L. In fruit:—7. Whixall; B. 8. Wilderley Green. 9. Ratlinghope; B.
Tetraphis pellucida L. In fruit:—4. Bomere and Shomere; H. 7. Nr. Hodnet; H.
Atrichum undulatum L.
Pogonatum nanum Brid. 4. Westcot. 8. Broomhill; B. 11. Isombridge; Ellerdine Common; A.
P. aloides Hedw.
P. urnigerum L. 9. Church Stretton; H. Longmynd; B. 11. Arkoll; B.
P. alpinum L. 4. Lord's Hill; H. & B. 8. Church Stretton; H. 9. Longmynd; Stapeley; B. 10. Titterstone; H.
Polytrichum gracile Menz. 4. Bomere; H. 7. Whixall Moss; B. 10. Brown Clee; *Rev. A. Ley.* 11. Arkoll; A.
P. formosum Hedw.
P. piliferum Schreb.
P. juniperinum Willd.
P. commune L.
Fissidens bryoides Hedw.
F. exilis Hedw. 4. Belvidere Wood; Sutton; H. 11. Arkoll Wood; A.
F. viridulus Wahl. 4. Belvidere Wood; H. 11. Limekiln Wood; Arkoll; A. 12. Bridgnorth; S. — Var. *β. fontanus* Wils. 10. Poughn Hill Weir; W.
F. osmundioides Hedw. 8. Light Spout; B. Carding Mill Valley; W.
F. adiantoides Hedw. In fruit:—8. Broomhill; B.
F. taxifolius L. 4. Belvidere Wood; H. Lyd Hole; B. Minsterley; *W. Yelland.* 8. Broomhill; B. 9. Whitcliffe; W. 10. Haytons Bent; W. 11. Arkoll; Somerwood; A.
Schistostega osmundacea Dicks. 8. Broomhill; B.
Cinclidotus fontinaloides Hedw. 10. River Teme; W.
C. riparius Walk. Arn. 10. River Teme; W.
Fontinalis antipyretica L.
Hedwigia ciliata Dicks. 4. Sharpstones; H. 8. Church Stretton; H. 9. Ratlinghope; B.
Cryphæa heteromalla Hedw. 8. Wilderley; B. Red Hill; H.
Leucodon sciuroides Schw. 4. Huglith; The Gattens; B. 8. Castle Pulverbach; B. 9. Priors Halton; W. 10. Hope Gutter; W. 11. Ash-trees nr. Crudgington; A.

Neckera crispa L. 4. Lyd Hole; Oaks Wood; B.
N. complanata L.
Homalia trichomanoides Schreb. 4. Lyd Hole; Huglith; B. 7. Belvidere Wood; H. 8. Pulverbach; B. 11. Arkoll Wood; Dothill; A.
Pterygophyllum lucens Brid. 8. Smethcot Dingle; H. & B. 11. Limekiln Wood; Arkoll; A.
Leskea polycarpa Ehrht. 4. Monkmoor; Nobold; H. 10. Steventon; W. 11. Lawrence Hill; A.
Anomodon viticulosus L. 8. Buildwas and Wenlock; A. Pitchford Park; B. 9. Nr. Downton; W. 10. Hope Gutter; W.
Heterocladium heteropterum Bruch. 8. Smethcot Falls; H. & B. 10. Titterstone; H.
Thuidium tamariscinum Hedw. In fruit:—4. Oaks Wood; B.
Thamnium alopecurum L. 4. Lyd Hole; B. 7. Haughmond; H. 8. Underhill; B. Smethcot Dingle (in fine fruit); H. & B. 10. Hope Gutter; W. 12. Bridgnorth; S.
Climacium dendroides L. 4. Betton Pool; H. Stiperstones; B. 8. Broomhill; B. Wenlock's Wood; A. 9. Church Stretton; H. 10. Woofferton; W. 11. Steeraway; A. 12. Bridgnorth; S. 13. Coalbrookdale; A.
Isothecium myurum Poll. 4. Lyd Hole; Huglith; B. 8. Pulverbach; B. 9. Whitcliffe Wood; W. 11. Wrekin; A.
Homalothecium sericeum Schimp.
Camptothecium lutescens Dill.
C. nitens Schreb. 13. South-west end of Wrekin; A.
Brachythecium glareosum B. & S. 9. Nr. Lady Halton. 10. Hope Gutter; W.
B. albicans Neck. 4. Underdale and Sutton Road; H. 11. Limekiln Wood; A.
B. velutinum L.
B. rutabulum L.
B. rivulare Bruch. 8. Wilderley Hill; B.
B. populeum Hedw.
B. plumosum Swartz. 4. Lyd Hole; B. Rea Brook; H. 8. Smethcot; H. Underhill; Cothercot; B. Church Stretton; H.
Eurhynchium myosuroides L. 4. Oaks Wood; B. 7. Haughmond Hill; H. 8. Smethcot; Church Stretton; H. 9. Whitcliffe Wood; W.
E. striatum Hedw.
E. crassinervium Tayl. 9. Whitcliffe Wood; W. 10. Steventon; W.
E. piliferum Schreb.
E. Swartzii Turn. 4. Red Hill; Radbrook and Meole; H. 9. Whitcliffe Wood; W. 10. Hope Gutter; W.
E. prælongum Dill.
E. pumilum Wils. 4. Lyd Hole; H. 7. Haughmond Hill; H.
Rhynchostegium tenellum Dicks. 11. Apley Lawn Walls; A.
R. confertum Dicks.
R. murale Hedw. 4. Belvidere; H. 8. Pitchford Park; B. 11. Limekiln Woods; A.

R. ruscifolium Neck.

Plagiothecium latebricola Wils. 4. Lord's Hill; H.

P. denticulatum L.

P. Borrerianum Spruce (*Hypnum elegans*). 4. Lyd Hole; H. Stiperstones; B. 10. Brown Clee; W. Titterstone Clee; H. 13. Wrekin; A.

P. sylvaticum L. 8. Underhill Wood; B. 11. Ellerdine Heath; Limekiln Woods; A.

P. undulatum L. 4. Hunter's Wood; Oaks Wood; Vessons; B. 7. Hawkstone Park; H. 8. Church Stretton; H. 9. Whitcliffe Wood; W. 11. Arkoll Wood; A.

Amblystegium serpens L.

A. irriguum Wils. 4. Nr. Pengwern Boat-house; Radbrook; Lord's Hill; H. 8. Pulverbach; B. 9. Castle Mill Weir, Ludlow; W. 10. Poughn Hill; nr. Ledwych; W.

A. riparium L. 2. Hencote Pool; H. 4. Bomere Pool; Mare Pool; H. Lincroft Pool; B. 8. Pulverbach; Longden; B. 10. A very complanate form in fruit at Wigley; W. 11. Limekiln Woods; A. 12. Willey; B.

Hypnum aduncum L. 9. Stapeley Hill; B.—Var. *Kneiffii.* 8. Wilderley Green; Marl-pits, Pulverbach; B. 9. Longmynd; B.

H. exannulatum Gümb. 4. Stiperstones; B. In fruit:—8. Wilderley Green; and 9. Longmynd; B. 10. Titterstone; H.

H. vernicosum Lindl. 8. Wilderley Green; H. Cothercot Hill; B. 12. Titterstone; W.

H. Cossoni Schimp. (*H. intermedium*). 8. Wilderley Green; B. 9. Longmynd; B. Stapeley Hill; H.

H. Sendtneri Schimp. 8. Wilderley Green; B.

H. revolvens Swartz. 8. Wilderley Green (in fruit); B. Church Stretton; W. 9. Nr. Ratlinghope; Minton Beach; B.

H. fluitans Dill. 7. Whixall; B. 10. Brown Clee Hill; W.

H. uncinatum Hedw. 8. Cothercot Hill (in fruit); B. 13. Between Wrekin and Little Wenlock; A.

H. filicinum L.

H. commutatum Hedw. 4. Lyd Hole (in fruit); H. & B. 8. Smethcote Dingle; B. Light Spout; H. 10. Hope Gutter; Woofferton; W. 11. Limekiln Wood; A.

H. falcatum Brid. 8. Caradoc Hill; H. 9. Longmynd, nr. Pole; Minton Beach; B. Stapeley Hill; H. & B.

H. cupressiforme L.—Var. *β. tectorum.* 7. Grinshill; H.—Var. *δ. ericetorum.* 11. Wrekin; H.—Var. *filiforme.* 4. Oaks Wood; B. 9. Whitcliffe Wood; W.

H. resupinatum Wils. 4. Shelton Rough; H. 8. Pulverbach; B.

H. molluscum Hedw. 4. Lyd Hole; B. 8. Smethcote; H. 9. Nr. Church Stretton; H. 10. Hope Gutter; W. 11. Limekiln Wood; A. 12. Titterstone; W. Bridgnorth; S.

H. palustre L. 4. Crowmere; H. Lyd Hole; Reabrook; H. 8. Light Spout; B. 10. Hope Gutter; W. 11. Limekiln Wood; A.—Var. *imbricatum.* 10. Mill Wheel, Ashford; W.

H. Somerfeltii Myr. (*polymorphum* Hedw.). 10. Nr. Ludlow; W.

H. chrysophyllum Brid. 4. Nr. Oaks Hall. 8. Pulverbach; B. 11. Limekiln Wood; A. 4. Nr. Shomere Moss; H.

H. stellatum Schreb. 5. Stapeley Hill; H. & B. 8. Wilderley Green; B. Church Stretton; W. & H. In fruit at Minton Beach; B. Shelve; B. 11. Limekiln Wood; A.

H. cordifolium Hedw. 4. Lincroft Pool (in fruit); B. Lord's Hill; Bomere; H. 8. Marl-pits, Pulverbach (in fruit), B. 10. Saltmoor; W. 11. Leegomery; A.

H. giganteum Schimp. 8. Wilderley Hill; and 9. Minton Beach; B.

H. cuspidatum L. Frequent in fruit.

H. Schreberi Ehrh. In fruit:—4. Hunter's Wood; B.

H. purum L. In fruit:—4. Pontesford Hill; Westcott; B. 8. Pulverbach; B. 9. Whitcliffe Wood; W. 10. Nr. Tenbury; W.

H. stramineum Dicks. 4. Stiperstones. 8. Wilderley Green (in fruit). 9. Longmynd; B.

H. scorpioides L. 8. Light Spout; H. 9. Longmynd, nr. Pole; Minton Beach; B. 12. Titterstone; W.

Hylocomium splendens Dill. In fruit:—4. Hunter's Wood; 8. Broomhill; B.

H. squarrosum L. In fruit:—4. Oaks Wood; Westcott; 8. Abundantly at Broomhill; B.

H. loreum L. 4. Oaks Wood; Vessons; Huglith; B. 8. Church Stretton; H. Underhill; B.

H. triquetrum L. In fruit:—4. Oaks Wood; 8. Broomhill; B.

FURTHER RECORDS FOR THE SCILLY ISLES.

By E. D. Marquand.

In Mr. A. Somerville's interesting paper on p. 118, allusion is made to the unpublished Flora of Scilly compiled by my old friend the late Mr. John Ralfs, of Penzance. Some ten or twelve years ago I made a copy of the little manuscript volume, and on now referring to it I find that whilst it covers about fifteen of Mr. Somerville's additions, it also comprises a considerable number of species which have not been recorded in these pages.

As there seems but little probability af Ralfs' *Flora of West Cornwall* ever being published, it may be advisable to print this list without any further delay, and so bring the Scillonian Flora up to date. I know Ralfs visited the Islands on several occasions, and I am almost certain he was there in the year 1852.

I give the list exactly as I copied it, so far as these additional species are concerned. The names in brackets are those of the first finders of the species, or perhaps the only ones; in all other cases Mr. Ralfs himself is the authority for the localities noted. Sometimes no locality is specified, indicating probably that the author had not himself met with the plant.

Under *Ulex nanus* in Mr. Townsend's list there is this note:—

"This is undoubtedly *U. Gallii*, which is common; I believe the true *U. nanus* has not been found in Cornwall.—J. R."; and there is also a note to the effect that the author had searched in vain for *Acanthus mollis*, a plant said to have been "introduced by unknown agency into the Isle of St. Agnes, Scilly."

Ranunculus peltatus Fries. St. Mary's. Tresco.
R. intermedius Hiern. Higher Marsh, St. Mary's.
R. acris L. St. Mary's.
R. Ficaria L. Common.
Papaver Rhœas L. St. Mary's; very scarce.
P. dubium var. *Lecoqii* Lam. St. Agnes (*Tellam*).
Sinapis arvensis L. St. Martin's. Tresco.
Cardamine sylvatica Link. St. Mary's.
Barbarea præcox Br. Near Old Grimsby, Tresco.
Cochlearia officinalis L. St. Mary's.
C. danica L. St. Mary's. Tresco. St. Agnes.
Viola tricolor var. *Curtisii* Mack. Sandhills near New Grimsby, Tresco (*Cunnack*). Sandy field below School, St. Martin's.
Stellaria Holostea L.
S. graminea L. St. Mary's.
Moenchia erecta Sm. Common.
Scleranthus annuus L.
Hypericum pulchrum L. St. Mary's.
Lavatera sylvestris Brot. Old Grimsby, Tresco; very abundant. Higher Town, St. Agnes. Hugh Town, St. Mary's, sparingly.
Oxalis Acetosella L. St. Mary's.
Anthyllis Vulneraria L. Common (*Millett*).
Melilotus arvensis Wall. Tresco.
Trifolium suffocatum L. Tresco. St. Agnes. St. Mary's. St. Martin's.
Lotus angustissimus L. St. Mary's. Tresco.
Callitriche obtusangula Le Gal. The common species at St. Mary's (*fide Mr. Briggs* and *Mr. Hanbury*).
Anthriscus sylvestris Hoff. St. Mary's.
Galium Mollugo L.
Valerianella Olitoria Moench. St. Mary's; not common.
Scabiosa arvensis L.
Carduus nutans S. St. Mary's.
Carlina vulgaris L.
Inula Helenium L. Field at Old Town Marsh, St. Mary's (*Millett*).
Aster tripolium L.
Solidago Virgaurea L. St. Mary's.
Bartsia Odontites Huds. St. Mary's.
Veronica hederifolia L. St. Mary's.
Mentha Pulegium L. St. Mary's, near the Giant's Grave; scarce. Holy Vale.
M. sylvestris L. St. Mary's. St. Martin's. St. Agnes. Tresco.
Marrubium vulgare L.
Stachys sylvatica L. St. Mary's.
Lamium album L.
Myosotis versicolor Reich. White variety, with paler foliage. Battery Ground, St. Mary's.
Chenopodium olidum Curt.
C. rubrum L. Old Grimsby, Tresco.
Rumex rupestris Le Gal. The Gugh, St. Agnes.
R. maximus Schreb. St. Mary's (*fide Mr. Briggs*).
Euphorbia Peplis L. St. Agnes, *J. Woods*, 1853. "I have searched for it in vain."—J. R.

Humulus Lupulus L. St. Mary's.
Sparganium ramosum Huds. Bog, St. Mary's.
Arum maculatum L. Tresco.
Potamogeton perfoliatus L. Tresco.
Butomus umbellatus L. (*Millett*). "I have failed to find this plant."—J. R.
Scilla autumnalis L.
Luzula campestris DC. St. Mary's.
L. congesta Koch. St. Mary's.
Carex pilulifera L. Higher Marsh, St. Mary's.
Sclerochloa maritima Lind. Higher Marsh, St. Mary's (*Curnow*).
Hordeum pratense Huds. Old Town Marsh.
Nardus stricta L.
Lomaria Spicant Desv. Salakee Down, nr. the Giant's Castle (*Millett*).
Asplenium Ruta-muraria L. (*Cooke*).
Aspidium angulare Willd.
Nephrodium æmulum Bak.
Ophioglossum vulgatum L. Bar Point, St. Mary's (*Millett*).
Botrychium Lunaria Sw. Bar Point, St. Mary's, in the neighbourhood of the Telegraph (*Millett*).

SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Continued from p. 217.)

*** Australasica et Ins. Norfolk.

++ Carpella ad apicem aristata vel angulato-apiculata.

⊙ Carpella calycem breviora vel subæquantia.

† Sepala calycis tubo breviora vel subæquantia.

80. Abutilon tubulosum Walp. Ann. ii. p. 158; Benth. in Fl. Austral. i. p. 200. *Sida tubulosa* A. Cunn.; Hook. in Mitch. Trop. Austr. p. 390.

Hab. Queensland! N. S. Wales! N. and S. Australia.

Var. (?) breviflorum Benth. *l. c.*

Hab. Dawson River!

81. A. amplum Benth. *l. c.*

Hab. North Australia. Nichol Bay!

Petals $1\frac{1}{2}$–$1\frac{3}{4}$ in. long.

82. A. leucopetalum F. Muell.; Benth. *l. c.* *Sida leucopetala* F. Muell. Frag. ii. p. 12.

Hab. N. and S. Australia! N. S. Wales. Queensland.

83. A. Mitchelli Benth. *l. c.* p. 201.

Hab. Queensland! S. Australia.

Var. (?) mollissima Benth. *l. c.*

Hab. Stony Ridge!

Abutilæa cryptantha F. Muell. in Linnæa, xxv. p. 379, ought, according to Mr. Bentham, to be considered a form of *A. Mitchelli*.

84. A. micropetalum Benth. *l. c.* p. 201. *Sida micropetala* R. Br. in Herb.!

Hab. Queensland. N. S. Wales!

85. A. CRYPTOPETALUM F. Muell.; Benth. *l. c.* *Sida cryptopetala* F. Muell. Frag. ii. p. 11.
Hab. N. S. Wales. W. Australia! N. and S. Australia.

86. A. GERANIOIDES Benth. *l. c.* p. 202. *Sida geranioides* DC. Prod. i. p. 474.
Hab. W. Australia!

† † Sepala calycis tubo longiora.

87. A. OTOCARPUM F. v. Muell.; Benth. *l. c.* p. 202.
Hab. N. Australia. Queensland. N. S. Wales. W. and S. Australia!

88. A. SUBVISCOSUM Benth. *l. c.*
Hab. Queensland?

89. A. LONGILOBUM F. v. Muell. Frag. ix. p. 130.
Hab. N. and W. Australia.

90. A. EXONEMUM F. v. Muell. in Frag. xi. p. 63.
Hab. N. Australia. Nickol River!
This plant is only 1–2-ovuled.

⊙ ⊙ Carpella calycem superantia.

91. **A. Hannii,** n. sp. Caule erecto perenne, foliis parvis cordatis lanceolatis acutis molliter cinereo-velutinis fere concoloris petiolatis, floribus axillaribus pedunculis juxta florem articulatis, sepalis ovatis acuminatis molliter cinereo-velutinis, petalis calyce multo longioribus, carpellis breviter aristatis externe cinereo-pubescentibus calyce multo superantibus 2-spermis.
Hab. Queensland. Cape York Peninsula Exp., *W. Hann*, No. 76!

Petals ½ in. long; carpels ⅜ in. long.

92. A. AUSTRALE Garcke, Ind. Sem. H. Berol. 1861, p. 10. *A. oxycarpum* F. v. Muell.; Benth. *l. c.* p. 204. *Sida oxycarpa* F. v. Muell. Frag. ii. p. 13.
Hab. N. and S. Australia. Queensland! N. S. Wales! W. Australia.

Var. (?) MALVÆFOLIUM = A. OXYCARPUM var.? MALVÆFOLIUM Benth. *l. c.*
Hab. N. S. Wales. Mt. Murchison.

↔ ↔ Carpella ad apicem rotundata vel angulata.

93. A. CUNNINGHAMII Benth. *l. c.* p. 205.
Hab. N. Australia! Queensland.

94. A. FRASERI Walp. Ann. ii. p. 158; Benth. *l. c.* p. 205. *Sida Fraseri* Hook. in Mitch. Trop. Austr. p. 368.
Hab. N., S., and W. Australia. Queensland. N. S. Wales.

Var. PARVIFLORA Benth. *l. c.* *A. diplotrichum* F. v. Muell. in Linnæa, xxv. p. 380.
Hab. S. Australia!

95. A. HALOPHILUM F. v. Muell. in Linnæa, xxv. p. 381. *A. Fraseri* var. *halophilum* Benth. *l. c.*
Hab. N. S. Wales. S. Australia! W. Australia? Queensland.

96. A. MACRUM F. v. Muell. Frag. ix. p. 59.
Hab. South Australia. North of Fowler's Bay !
Aspect of *Sida virgata* Hook.

97. A. JULIANÆ End. Prod. Fl. Ins. Norfolk. p. 75. *Sida Julianæ* Dietr. Syn. iv. p. 856.
Hab. Norfolk Is. N. S. Wales.

* * *
* * * Sandvicensia.

98. A. MENZIESII Seem. Fl. Vit. p. 15.
Hab. Sandwich Is., *Menzies* !

* * *
* * * Malayana.

99. A. NEUROCARPUM Miq. Pl. Jungh. p. 285.
Hab. Java.
I do not know the number of ovules of this plant.

100. **A. Listeri**, n. sp. Caule vel ramo ligneo tereto, foliis membranaceis cordatis ovatis acuminatis petiolatis petiolis sæpe torquatis crenato-serratis subtus minute stellato-pubescentibus, floribus axillaribus solitariis pedunculis teretibus strictis longis versus apicem articulatis et curvatis, sepalis lanceolatis acuminatis externe cinereo-pubescentibus margine pubescentibus, petalis (in sicco flavis) calyce longioribus, carpellis calyce brevioribus dense stellato-pilosis aristatis 2-spermis.
Hab. Christmas Island, *J. J. Lister* !
Fruiting peduncles 2–3 in. long; calyx nearly $\frac{1}{2}$ in.; petals $\frac{3}{4}$ in. long.

C. Carpella 4–∞ ovulata.

† Folia peltata vel subpeltata.

101. A. PELTATUM K. Schum. *l. c.* p. 398, t. lxxii.
Hab. Brazil. Prov. Minas Geraes.

102. A. FLUVIATILE K. Schum. *l. c.* p. 399. *Sida fluviatilis* Vell. Fl. Flum. vii. t. 8.
Hab. Brazil, nr. Rio Janeiro.

† † Folia haud peltata.

– Calyx tubulosa margine dentata.

103. A. MEGAPOTAMICUM St. Hil. et Naud. Ann. Sc. Nat. ii. xviii. p. 49; Fl. de Serres, t. 1599. *A. vexillarium* E. Morr. Belg. Hort. 1864, p. 289. *Sida megapotamica* Spreng f. Tent. Supp. p. 19.
Hab. Brazil. Prov. Rio de Janeiro !

104. A. INFLATUM Garcke et K. Schum. Fl. Brazil, *l. c.* p. 401.
Hab. South Brazil.

105. A. LONGIFOLIUM K. Schum. *l. c.* p. 402, t. lxxiv.
Hab. Brazil.

– – Calyx basi turbinata.

106. A. MOLLISSIMUM Sweet, Hort. Brit. i. p. 53. *A. calycinum* Presl, Reliq. Haenk. ii. p. 116. *A. asiaticum* Griseb. Symb. ad Flor. Arg. p. 48. *A. sordidum* K. Schum. *l. c.* p. 406. *Sida*

mollissima Cav.; DC. Prod. i. p. 470. *S. cistiflora* L'Herit. Stirp. i. p. 127, t. 61.

Hab. Peru! Argentine Republic.

107. A. GRANDIFOLIUM Sweet, Hort. Brit. ed. 1, p. 53. *A. molle* Sweet, Hort. Brit. ed. 2, p. 65. *A. tortuosum* Guill. & Perr. Fl. Seneg. p. 68. *A. mollissimum* K. Schum. *l. c.* p. 403. *A. Arnottianum* Walp. Rep. i. p. 324. *Sida mollis* Ort.; DC. Prod. i. p. 470. *S. grandifolia* Willd.; Bot. Reg. t. 360. *S. Arnottiana* Gill.; Hook. & Arn. Bot. Misc. iii. p. 154.

Hab. Peru! Uruguay! Paraguay! Argentine Republic!

108. A. PAUCIFLORUM St. Hil. Fl. Bras. Mer. i. p. 206. *A. melanocarpum* St. Hil. & Naud. in Ann. Sc. Nat. Ser. 2, xviii. p. 48. *A. pedunculare* Griseb. Fl. Brit. West Indies, p. 78. *Sida peduncularis* MacFad. Fl. Jam. i. p. 85. *S. ecornis* Vell. Fl. Flum. vii. t. 16.

Hab. Brazil! Argentine Republic! Uruguay! Paraguay. Bolivia! Central America! West Indies! Florida!

+ + + Calyx campanulata.

* Folia suprema haud lobata.

⊙ Gerontogea.

109. A. POLYANDRUM Wight. & Arn. Prod. i. p. 55. *A. oxyphyllum* Edgw. in Trans. L. Soc. xx. p. 35. *Sida polyandra* Roxb. Hort. Beng. p. 50. *S. oxyphylla* Wall. Cat. No. 1850. *? S. persica* Burm. ex Cav. Dis. p. 35. *S. Wallichii* Steud. Nom. ed. 2, ii. p. 579.

Hab. India! Upper Burma! Pegu.

110. A. SONNERATIANUM Sweet, Hort. Brit. i. p. 54. *Sida Sonneratiana* Cav.; DC. Prod. i. p. 470.

Hab. Cape!

111. A. SINENSE Oliv. in Icones Plant. vol. xviii. t. 1750.

Hab. China. Prov. Hupeh, *Henry*, Nos. 3822! 3454!

⊙ ⊙ Neogea.

112. A. DEPAUPERATUM Anderss. om Galap.-Oar. Veg. p. 98. *Sida depauperata* Hook. f. in Trans. Linn. Soc. xx. p. 232.

Hab. Galapagos Is., *Darwin.*

113. A. AMPLEXIFOLIUM Don, Gen. Syst. i. p. 502; Hemsl. Diag. Pl. Nov. pars. alt. p. 23. *Sida amplexifolia* DC. Prod. i. p. 469.

Hab. Mexico, *Ruiz & Pavon*! Orizaba, *Botteri*, No. 770! Valley of Cordova, *Bourgeau*, No. 1512! Vera Cruz to Orizaba, *Müller*, No. 1666!

114. A. NOTOLOPHIUM A. Gray in Proc. Am. Acad. v. p. 175.

Hab. Mexico. Tantoyuca, *Berlandier*, 743, 2163 in part.

A. macranthum Peyr. in Linnæa, xxx. p. 59, non St. Hil., collected by Heller at Zacuapan, No. 46, must closely resemble the above.

A. discolor Bak. fil. (Journ. Bot. 1893, 73), Berlandier 2163 in part, differs from *A. notolophium* Gray by the peduncles being shorter than the very discolorous leaves, and by the flowers being smaller.

115. A. PEDUNCULARE H. B. K. Nov. Gen. et Sp. v. p. 273. *Sida pedunculares* DC. Prod. i. p. 469.

Hab. New Granada!

The peduncles of this plant are 5–8 in. long.

116. A. PETIOLARE H. B. K. *l. c.* p. 272.

Hab. New Granada!

117. A. INÆQUALE K. Schum. *l. c.* p. 407. *Sida inæqualis* Link & Otto, Pl. Select. Hort. Berol. p. 75, t. 34. *S. Mendanha* Vell. Fl. Flum. vii. t. 23.

Hab. South Brazil!

Dr. Garcke (in Engler's Bot. Jahrbuch. 1893, p. 484) states that *A. appendiculatum* K. Schum. is synonymous with this plant.

118. A. GLAZIOVII K. Schum. *l. c.* p. 408.

Hab. Brazil. Prov. Rio Janeiro, *Glaziou*, No. 10307! *Lieut. Speke*! *J. Ball*!

119. A. RUFIVELLUM K. Schum. in herb.

Hab. Brazil. Prov. Rio Janeiro, *Glaziou*, No. 18136!

A. benedictum Bunbury in Proc. Linn. Soc. i. p. 109, must be allied to the above.

120. A. MACRANTHUM St. Hil. Fl. Bras. Mer. i. p. 208. *A. lanatum* Miq. in Linnæa, xxii. p. 553; K. Schum. *l. c.* t. lxxv.

Hab. Brazil. Prov. Minas Geraes!

121. A. MOURÆI K. Schum. *l. c.* p. 410.

Hab. South Brazil, *Glaziou*, No. 13542!

122. A. AMOENUM K. Schum. *l. c.* p. 411.

Hab. South Brazil, *Sellow*.

123. A. SCHENCKII K. Schum. *l. c.* p. 412.

Hab. Brazil. Prov. Rio de Janeiro.

124. A. GLOBIFLORUM Don, Gen. Syst. i. p. 502. *Sida globiflora* Bot. Mag. t. 2821.

Hab. Peru or Chili, "*Mathews*, No. 1550. Lamas"!

In the description in the 'Botanical Magazine' it is thought to be a native of Mauritius; but the seeds, I think, must have been carried to this island from the habitat quoted above.

125. A. ARBOREUM Sweet, Hort. Brit. i. p. 53. *Sida arborea* L.; L'Herit. Stirp. Nov. p. 131, t. 83; DC. Prod. i. p. 469. *S. peruviana* Cav.; DC. Prod. i. p. 469. *S. grandiflora* Poir. in Encyc. Supp. i. p. 31.

Hab. Peru, *Dombey*! &c.

A. arborescens Medic. Malv. p. 29, and *A. frutescens* Medic. *l. c.*, are possibly synonymous with the above.

126. A. SCABRIDUM K. Schum. *l. c.* p. 413.

Hab. Brazil, *Sellow*, Nos. 744 & 1426.

Possibly same as *Sida truncata* Vell. Fl. Flum. vii. t. 17 (*A. truncatum* K. Schum.).

To a plant closely allied to the above, and collected by Glaziou, No. 15837, Dr. Schumann (*l. c.*) gives the name *Abutilon costicalyx*. The diagnosis is deferred.

127. A. GEMINIFLORUM H. B. K. Nov. Gen. et Sp. v. p. 274, t. 474. *? A. dianthum* Presl, Reliq. Haenk. ii. p. 114. *Sida geminiflora* DC. Prod. i. p. 470. *? S. diantha* Dietr. Syn. iv. p. 856.

Hab. Venezuela, *Fendler*, No. 98!

128. A. RUFINERVE St. Hil. Fl. Bras. Mer. i. p. 205, t. 42. *S. pæoniflorum* Bot. Mag. t. 4170.

Hab. Brazil. Prov. Rio Janeiro! Minas Geraes! St. Paulo. St. Catherina! &c.

Var. β. CONFERTA St. Hil. Fl. Bras. Mer. i. p. 206.

Hab. Padre Correa, *Pohl*, No. 30.

Var. γ. LATIFOLIA St. Hil. & Naud. in Ann. Sc. Nat. ii. Ser. xviii. p. 49.

Hab. Serra de Orgaos, *Gardner*, No. 319!

Var. δ. OCHRACEA K. Schum. *l. c.* p. 416.

Hab. Prov. Minas Geraes.

Var. ε. SUBGLABRA K. Schum. *l. c.*

Hab. South Brazil, *Sellow*, No. 726!

129. A. BEDFORDIANUM St. Hil. & Naud. in Ann. Sc. Nat. Ser. ii. xviii. p. 48. *Sida Bedfordiana* Hook. in Bot. Mag. t. 3892.

Hab. Brazil.

Var. α. CONCOLOR K. Schum. *l. c.* p. 417.

Hab. Brazil. Prov. Rio de Janeiro, *Gardner*, No. 320! &c.

Var. β. DISCOLOR K. Schum. *l. c.* p. 418.

Hab. Brazil. Prov. Minas Geraes. St. Paulo.

130. A. SILVATICUM K. Schum. *l. c.* *Sida silvatica* Cav.; DC. Prod. i. p. 466.

Hab. Peru. Bolivia, *Mandon*, No. 821! *M. Bang*!

131. A. ESCULENTUM St. Hil. Pl. Usuel. t. 51. *A. virens* St. Hil. & Naud. in Ann. Sc. Nat. ser. 2, xviii. p. 48. *S. rosea* Link & Otto, Ic. Pl. Select. p. 71, t. 32; Bot. Mag. t. 3150. *? S. speciosa* Willd. ex Spreng. Syst. Veg. iii. p. 119. *S. triflora* Vell. Fl. Flum. vii. t. 24.

Hab. Brazil.

Dr. Garcke, *l. c.*, p. 490, states that *Sida purpurascens* Link, Enum. Hort. Berol. ii. p. 206, is probably not synonymous with the above.

132. A. CARNEUM St. Hil. Fl. Bras. Mer. i. p. 205.

Hab. Brazil. Prov. Rio de Janeiro.

133. A. FALCATUM St. Hil. & Naud. in Ann. Sc. Nat. ser. 2, xviii. p. 48.

Hab. Brazil. Prov. Rio de Janeiro.

According to Dr. Garcke (in Engler's Jahrbuch, 1893, p. 488), may be the same as *A. Schenckii* K. Schum.

134. A. MACROCARPUM St. Hil. & Naud. *l. c.* p. 47.

Hab. Brazil. Prov. Rio de Janeiro!

Leaves discolorous, about 3 in. long, and 2–2¼ in. broad.

135. A. MACROPHYLLUM St. Hil. & Naud. *l. c.*

Hab. Brazil. Prov. Rio de Janeiro!

136. A. MONTANUM St. Hil. Fl. Bras. Mer. i. p. 207.
Hab. Brazil. Prov. Minas Geraes.

(To be continued.)

ÆCIDIUM LEUCOSPERMUM DC.

By Henry T. Soppitt.

During the spring months of the past four years I have given some little study to *Æcidium leucospermum*, which is parasitic on the leaves of *Anemone nemorosa*. It cannot be regarded as common in this country, as during the past ten years I have only met with it in four or five localities, and these widely apart. There is a considerable difference of opinion regarding its life-history. Continental botanists regard it as the *Æcidium* stage of *Puccinia fusca* Relh., and it is included under that species by Winter, Schroeter, and Saccardo. Prof. Traill shares this opinion, stating, "They appear to be related, so far as one may judge from the facts of their occurrence"; but Plowright differs from the above, owing to the "absence of direct biological evidence." My own experience of *Puccinia fusca* is that it is one of the commonest of British *Uredineæ*, and I have noticed that it makes its appearance long before the *Æcidium*.

On May 27th, 1890, I was fortunate in finding the *Æcidium* at Steeton, some ten miles distant, and a few weeks later on at Bolton Woods. In both localities *Puccinia fusca* was prevalent. The habitat of several plants affected with *Æcidium* was marked with a view to observing whether the *Æcidium* was succeeded by any other spore form; and on several occasions later in the season I revisited the localities, but failed to find the slightest trace of uredospores or teleutospores either on the same host or on any other species of plant in the vicinity.

For the purpose of experiment, during the following spring I collected a quantity of *Puccinia fusca*, which was kept during the winter out of doors under a bell-glass. At various times during April, 1891, the spores were placed in water, and repeatedly examined, but in not a single instance did I observe germination. The spores, however, were subsequently applied in quantity to healthy *Anemone* plants, but no result followed.

In the middle of May, 1891, I transplanted into my garden from Steeton several plants of *Anemone nemorosa*, the leaves of which were permeated with mycelium of the *Æcidium*. A few days afterwards the spores were ripe, and I had a good opportunity of observing their germination. The germ-tube attains a considerable length, and occasionally its extremity becomes dilated, assuming a globular spore-like form more than half the size of the æcidiospore. But in not a single instance—and I frequently observed it in subsequent cultures—did it become detached, or attempt to germinate.

On May 24th, 1891, I had an abundant supply of spores of the

Æcidium, and these were applied in a state of germination to the leaves of healthy established plants of *Anemone nemorosa*. These were in an isolated position, and carefully watched for many weeks following, but without the slightest results. The leaves reappeared in April, 1892, and were observed daily, but bore no trace of fungi. The plants in my garden affected with *Æcidium* in 1891 again produced the *Æcidium* in 1892, and the spores were mature by April 25th.

Early in May, 1892, I established a batch of seedling plants of *Anemone nemorosa*, and applied to the leaves a profusion of germinating spores of the *Æcidium*. No signs of any result followed in 1892, and although the majority of the seedlings did not reappear in 1893, I had the satisfaction, on April 19th, of seeing several cups of the *Æcidium* on one of the leaf-segments.

Considering the amount of infecting material used, the results were slight, yet, taken in conjunction with numerous observations made on the fungus in a state of nature, I have not the least doubt that *Æcidium leucospermum* DC. is a species distinct from *Puccinia fusca* Relh.; that it reproduces itself entirely by means of its spores and perennial mycelium, and that its development is similar in every respect to *Endophyllum*, with this exception, that it does not produce promycelial spores.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

WILLIAM A. CLARKE, F.L.S.

(Continued from p. 248.)

Chrysanthemum segetum L. Sp. Pl. 889 (1753). **1570.** "Segetes Angliæ scatent."—Lob. Adv. 237.

C. Leucanthemum L. Sp. Pl. 888 (1753). **1570.** "Bellis major.—Angl. Greate Daysie."—Lob. Adv. 200.

Matricaria inodora L. Fl. Suec. ed. 2, 297 (1755). **1633.** The "May weed without any smell," descd. Ger. em. 757, first paragr.

M. Chamomilla L. Sp. Pl. 891 (1753). **1632.** Hampstead Heath.—Johns. Enum. ("Chamæmelum sive Anthemis vulgatior Lob.").

Tanacetum vulgare L. Sp. Pl. 844 (1753). **1597.** "Groweth wilde in fields as well as in gardens."—Ger. 526.

Artemisia Absinthium L. Sp. Pl. 848 (1753). **1551.** "Groweth . . . aboute tounes diches," &c.—Turn. i. 3.

A. vulgaris L. Sp. Pl. 848 (1753). **1551.** "Thys common Mugwurt of ours groweth . . . in hedges and among the Corne."—Turn. i. 61.

A. campestris L. Sp. Pl. 846 (1753). **1650.** "On Newmarket Heath, Mr. Sare." How, Phyt. i. 4.

A. maritima L. Sp. Pl. 846 (1753). **1548.** "Plentuous in Northumberlande by holy Ilande and in Northfolke beside Lin."—Turn. Names, A iiij, back.

Tussilago Farfara L. Sp. Pl. 865 (1753). **1548.** "Groweth by water sydes and in marishe groundes."—Turn. Names, G vi, back.

Petasites officinalis Moench. Meth. 568 (1794). **1538.** "Petasites . . . a butter bur, northumbrienses vocant an Elden."—Turn. Lib.

Senecio vulgaris L. Sp. Pl. 867 (1753). **1538.** "Senecio . . . . angli vocant Grunswell."—Turn. Lib. "Groweth most in mud walles and about cyties."—Turn. ii. 132 (1562).

S. sylvaticus L. Sp. Pl. 868 (1753). **1713.** "Cotton Groundsel. Hamsted."—Pet. Hb. Brit. xvii. 6.

S. viscosus L. Sp. Pl. 868 (1753). **1660.** "On all the Fen banks almost in the Isle of Ely."—R. C. C. 154

S. erucifolius L. Sp. Pl. ed. 2, 1218 (1763). **1677.** "In aggeribus sepium & dumetis."—Ray, Cat. ed. 2, 170. [? "Jacobæa minor foliis magis dissectis."—Johns. Kent (1632), 14.]

S. Jacobæa L. Sp. Pl. 870 (1753). **1597.** "Lande Ragwoort groweth everywhere."—Ger. 219.

S. aquaticus Huds. i. 317 (1762). **1660.** In Cambs ("In humidis et aquosis").—R. C. C. 80.

S. paludosus L. Sp. Pl. 870 (1753). **1660.** "In many places about the Fens as by a great ditch side near Stretham ferry, &c." (Cambs).—R. C. C. 37.

S. palustris DC. Prod. vi. 363 (1837). **1650.** "A stones cast from the East end of Shirley Poole neere Rushie moore belonging to Mr. Davey Washington. In Yorkeshire, Hoary Fleabane, Mr. Heaton."—How, Phyt. 30, 3. "About March and Chatteris, in the Isle of Ely."—Ray, Cat. Cant. 37 (1660).

S. campestris DC. Prod. vi. 361 (1837). **1660.** "On Gog-magog hills and Newmarket heath" (Cambs).—R. C. C. 80.

S. spathulæfolius DC. Prod. vi. 362 (1837). **1800.** "On cliffs near Holyhead, Anglesea. Rev. H. Davies.—Sm. Fl. Brit. ii. 896. (See Babington in Journ. Bot. 1882, p. 33.)

Carlina vulgaris L. Sp. Pl. 828 (1753). **1597.** "In untoiled and desart places and oftentimes upon hils."—Ger. 997. "Upon Blackheath . . . Kent."—Ger. em. **1159.**

Arctium Lappa L. Sp. Pl. 816 (1753) (aggregate). **1548.** "Groweth cōmōly about townes and villages."—Turn. Names, F ij (sub Personata).

A. majus Bernh. Syst. Verz. Erf. 154 (1800). **1724.** "Common before you come to New-Cross in Kent; Mr. J. Sherard."—Ray, Syn. iii. 197.

A. nemorosum Lej. ap. Reichb. Ic. Fl. Germ. xv. 54 (1853). **1865.** "Llanberis, Carnarvonshire."—Babington in Ann. N. H. ser. 3, xv. 11—which see.

A. minus Bernh. Syst. Verz. Erf. 154 (1800). **1843.** First occurs in British Floras by this name in Bab. Man. ed. 1, p. 171.

A. intermedium Lange, Dansk. Fl. 463 (1864). **1856.** "Near

Berwick upon Tweed," &c.—Bab. in Ann. N. H. ser. 2, xvii. 375 [as var. of *A. minus*.—Bab. Man. ed. 3, 179 (1851)].

Carduus pycnocephalus L. Sp. Pl. ed. 2, 1151 (*C. tenuiflorus* Curt.). **1634.** "C. spinosissimus capitulis minoribus sive Polyacantha, Lob."—Johns. Merc. Bot. 26.

C. nutans L. Sp. Pl. 821 (1753). **1597.** "Groweth in the fieldes about Cambridge."—Ger. 1012. Gerard's figure does not represent this species, and his description is somewhat vague; Johnson (Ger. em. 1174, 1176) figures and describes the plant, which he had seen "growing about Deptford."

C. crispus L. Sp. Pl. 821 (1753). **1629.** Johns. Kent, p. 8 ("C. Polyacanthus Theophrasti").

Cnicus lanceolatus Willd. Fl. Berol. Prod. 259 (1787). **1597.** "By highway sides and common paths, in great plenty."—Ger. 1012.

C. eriophorus Roth. Tent. i. 345 (1788). **1570.** "Frequēs in Angliæ collibus strigosis agri Sommerseti juxta œdes . . . . Eduardi Saintloo."—Lob. Adv. 370.

C. palustris Willd. Fl. Berol. Prod. 260 (1787). **1633.** "Growes on wet heaths."—Johnson, Ger. em. p. 1176, line 33.

C. tuberosus Roth. Tent. i. 345 (1788). **1813.** "Discovered . . . . by A. B. Lambert, Esq. [in 1812] in a wood . . . . called Great Ridge, near Boyton House, Wilts."—E. B. 2562.

C. pratensis Willd. Sp. Pl. iii. 1672. **1576.** "Cirsium anglicum . . . provenit in pratis C. viri D. Nicolai Pointz equitis præfecturæ Glostriensis in villa vernacule Acton nomine."—Lob. Obs. 315.

C. heterophyllus Roth, Catalecta, i. 114 (1797). **1583.** "Descriptionem & iconem mihi anno 1581 Londini communicavit C. V. Thomas Pennaeus Londinensis Medicus . . . . Provenit in pratis ad radices montis Englebrow totius Angliæ celsissimi in Comitatu Eboracensi."—Clusius, Stirp. Pannon. Hist. 655.

C. acaulis Willd. Fl. Berol. Prod. 260 (1787). **1629.** Johns. Kent, p. 2. "Upon Blacke heath," &c.—Ger. em. 1158.

C. arvensis Hoffm. Deutschl. Fl. ed. 2, i. ii. 130 (1804). **1597.** "By highway sides," &c.—Ger. 1012.

Onopordon Acanthium L. Sp. Pl. 827 (1753). **1562.** "Besyde Sion in England."—Turn. ii. 146.

Saussurea alpina DC. Ann. Mus. xvi. p. 198 (1810). **1641.** "On the Rockes on the highest part of Snowdon."—Johns. Merc. Bot. pars alt. 18.

Serratula tinctoria L. Sp. Pl. 816 (1753). **1570.** "In nemorosis . . . . Angliæ."—Lob. Adv. 231. "In Hampsteede Woode," &c.—Ger. 577.

Centaurea nigra L. Sp. Pl. 911 (1753), and **C. Scabiosa** L. Sp. Pl. 913 (1753). **1597.** "In everie fertill pasture."—Ger. 590.

C. Cyanus L. Sp. Pl. 911 (1753). **1538.** "Cyanus . . . . herbam arbitror esse quam northumbria vocat a Blewblaw aut a Blewbottell."—Turn. Lib.

C. Calcitrapa L. Sp. Pl. 917 (1753). **1597.** "Upon barren places neere unto cities and townes."—Ger. 1004.

Cichorium Intybus L. Sp. Pl. 813 (1753). **1538.** "Intu-

borum duo sunt genera . . . . Erraticus intibus dicitur etiam cichorium . . . . angli wylde suckery nominant."—Turn. Lib.

Arnoseris pusilla Gaertn. Fruct. ii. 355 (1791). **1650.** "In some barren fields in Yorkshire. Mr. Stonehouse."—How, Phyt. 61, 3.

Lapsana communis L. Sp. Pl. 811 (1753). **1597.** "Upon walles made of mudde or earth," &c.—Ger. 199. The figure is of another plant, but Johnson (Ger. em. 255) substitutes a correct one.

Picris hieracioides L. Sp. Pl. 792 (1753). **1641.** "Hieracium asperum in montosis pratis."—Johns. Merc. Bot. pars alt. 24.

P. echioides L. Sp. Pl. 792 (1753). **1551.** "Oure Langue de befe . . . in grēat plentye betwene Sion and Branfurd."—Turn. Hb. i. 143 (back).

Crepis fœtida L. Sp. Pl. 807 (1753). **1660.** In Cambridgeshire. ("Hieracium minus Cichorei vel potius Stœbes folio hirsutum.")—R. C. C. 75.

C. taraxacifolia Thuill. Fl. Par. ed. 2, 409 (1798). **1845.** Distinguished from *C. biennis* by Mr. Joseph Woods in 1841. See Trans. Linn. Soc. xix. 491.

C. virens L. Sp. Pl. ed. 2, 1134 (1672). **1597.** "In untoiled places," &c. ("Hieracium Aphacoides").—Ger. 236.

C. biennis L. Sp. Pl. 807 (1753). **1688.** "A D. Newton in Cantia inventum est."—Ray, Hist. ii. 1857.

C. succisæfolia Tausch, in Flora, ix. (1828); Erg. i. 79. **1794.** "In sylvis Scotiæ australis," 1789.—James Dickson in Trans. Linn. ii. 288 ("Hieracium molle").

C. paludosa Moench. Meth. 535 (1794). **1677.** "In montosis Septentrionalibus Angliæ."—Ray, Cat. ed. 2, 162.

Hieracium. Instead of attempting to deal *seriatim* with the species enumerated in the *London Catalogue*, I venture to substitute a very brief sketch of the rise and progress of our knowledge of this genus in Britain. The only species clearly described by Turner is *H. Pilosella*, his "yealowe Mouseare" (Names, H. iiij, and Herb. iii. 58). In other works before Ray several species are described, of which "H. Intybaceum" of Gerard is *H. umbellatum*, "Pulmonaria Gallorum Hieracii flore" (Johns. Eric.) is probably *H. murorum*, and "H. fruticosum latifolium hirsutum" (Johns. Merc. Bot. 42) *H. boreale*. Merrett's "Pulmonaria gallica sive aurea latifolia" and "angustifolia" observed "in the meadows on this side Hampstead" (Pinax, 99) have been referred to *H. vulgatum* (Fl. Midd. p. 178). Ray gives us *H. alpinum* observed by Lloyd in Wales (R. Syn. i. 45) (1690), and a plant found in Westmoreland by Lawson (R. Syn. ii. 74) (1696) may have been *H. anglicum*. From this time there is no addition to the list for nearly a hundred years, when in 1790 James Dickson recorded *H. prenanthoides* or *H. strictum* (his "H. spicatum") from Scotland (Crypt. Fasc. ii. 29). In Eng. Bot. eighteen species are described; but several of these are not native, and two ("H. paludosum" and "H. molle") are not Hieracia. "H. pulmonarium" (E. B. 2307) seems to be *H. nigrescens* or *H. pallidum*; and "H. villosum" (E. B. 2379) may be *H. eximium*. In Bab. Man. ed. 1 (1843) we have *H. iricum*

as "H. Lapeyrousii," and in ed. 2 (1847) *H. tridentatum* appears for the first time. Fries' "Symbolæ ad historiam Hieraciorum" (1848) gave a great impetus to the study of the genus, and in 1856 Mr. James Backhouse in a monograph described thirty-three species as British. This number has been increased to forty in the last edition of the *London Catalogue* (1886), and many more species have since been described by Messrs. Hanbury, Marshall, and others in the pages of the *Journal of Botany*.

Hypochæris glabra L. Sp. Pl. 811 (1753). **1670.** "On the gravelly heath-grounds near Middleton in Warwickshire."—Ray, **Cat. 167.**

H. radicata L. Sp. Pl. 811 (1753). **1597.** "In untoiled places," &c.—Ger. 236. Johns. Kent, (1632), 33.

H. maculata L. Sp. Pl. 810 (1753). **1663.** "On Gogmagog hills and Newmarket heath."—R. C. C. App. i. 6.

Leontodon hirtum L. Syst. ed. 10, ii. 1194 (1759). **1690.** "Found [by J. Bobert] on the banks of New Parks and divers other places about Oxford."—Ray, Syn. i. 237.

L. hispidum L. Sp. Pl. 799 (1753). **1634.** "Hieracium Dentis leonis folio hirsutum."—Johns. Merc. Bot. 43. [?"Hiosyris . . . roughe Dandelion" of Turn. Herb. ii. 18.]

L. autumnale L. Sp. Pl. 798 (1753). **1629.** "Hieracium minus præmorsa radice."—Johns. Kent, 2.

Taraxacum officinale Weber ap. Wigg. Fl. Holsat. 56 (1780). **1548.** "Dan de lyon . . . groweth everywhere."—Turn. Names, D vj, back.

Lactuca virosa L. Sp. Pl. 795 (1753). **1570.** "Lactuca agrestis odore opii—In Angliâ."—Lob. Adv. 89. Isle of Sheppey.—Johns. Kent, 5 (1629).

L. Scariola L. Sp. Pl. ed. 2, 1119 (1762). **1568.** "Lactuca sylvestris."—Turn. ii. 26. Hampstead Heath.—Johns. Enum. (1632).

L. saligna L. Sp. Pl. 796 (1753). **1660.** "This was found on a bank and in a ditch by the side of a kind of drove or lane leading from London road to the river just at the water near a quarter of a mile beyond the spittle-house end" (Cambs.).—R. C. C. 83.

L. muralis DC. Prod. vii. 139 (1838). **1633.** "Upon walls and in wooddy mountainous places."—Ger. em. 295.

L. alpina Benth. ex Hook. f. Stud. Flora, ed. 3, 241 (1884) (*Mulgedium alpinum* Less.). **1810.** "Discovered on the Aberdeenshire mountain of Lochnagore by Mr. G. Don, Sept. 1801."—E. B. 2425.

Sonchus oleraceus L. Sp. Pl. 794 (1753). **1538.** "Cicerbita . . . a nostris Sowthystell."—Turn. Lib.

S. asper Vill. Fl. Dauph. iii. 158 (1789). **1833.** Figured and described as a distinct species in E. B. S. 2765; but see Turn. Hb. i. 55, Ger. 229, &c.

S. arvensis L. Sp. Pl. 793 (1753). **1562.** "The greate hawke wede . . . in the medowe a lytle from Shene" (Turn. ii. 14) is probably this. "Sonchus arborescens."—Johns. Kent. 18 (1632).

S. palustris L. Sp. Pl. 793 (1753). **1666.** "In the medows betwixt Woolwich and Greenwich by the banks of Thames."—Merrett, 115. "Th. Willisellus invenit ad ripas Tamesis fluvii non longe a Grenvico."—Ray, Cat. ed. 2, 278 (1677).

Tragopogon pratensis L. Sp. Pl. 789 (1753). **1548.** "Groweth in the fieldes aboute London plentuously."—Turn. Names, B v.

Lobelia Dortmanna L. Sp. Pl. 929 (1753). **1677.** "In a Pool or lake called Hullswater that divides Westmorland from Cumberland 3 miles from Pereth plentifully."—Ray, Cat. ed. 2, 132.

L. urens L. Sp. Pl. 931 (1753). **1778.** "Supra Shute Common inter Axminster et Honiton. D. Newbery."—Huds. ii. 378.

Jasione montana L. Sp. Pl. 928 (1753). **1629.** "Scabiosa montana minima."—Johns. Kent, 9.

Wahlenbergia hederacea Reichb. Ic. Bot. v. 47. **1633.** "First discovered to grow in England by Master George Bowles Anno 1632, who found it in Montgomerie shire, on the dry bankes in the high-way as one rideth from Dolgeogg a Worshipfull Gentlemans house called Mr. Francis Herbert, unto a market towne called Mahuntleth, and in all the way from thence to the sea side." —Ger. em. 452.

(To be continued.)

SHORT NOTES.

Artificial Edelweiss.—Some enterprising persons have hit upon an ingenious plan for supplying the tourist with unlimited specimens of *Edelweiss*, which at the same time saves the trouble of growing and rearing them. The white woollen felted material of military coats, worn chiefly by Austrian soldiers, when cut into suitable strips, very much resembles the characteristic upper leaves of the plant, more particularly of course when the colour is somewhat mellowed by exposure and the natural process of wearing out the material. So that the happy thought has suggested itself of buying up quantities of these discarded military coats, and manufacturing from them *Edelweiss*, "wholesale, retail, and for exportation." My attention was called to the matter in June of this year by a resident in Lucerne, who possibly was unable to dispose satisfactorily of his garden-stock, owing to the manufacturers in the rival method of production making the plant a drug in the market. I therefore bought a specimen, and on dissecting it with two mounted needles, found as my informant had stated. It appears that the strips of cloth are carefully cut out and skilfully grafted on a foundation of any weed that comes handy, which may have a superficial resemblance to the *Edelweiss* in habit; the specimens are then pressed and dried, and the pious fraud is complete.—F. N. Williams.

Lobelia urens. — On July 20th I was taken to the habitat of this plant, near Axminster (Devon). It may interest your readers

to know that I found the plant scattered over about half an acre of ground, sufficiently abundant to give at a distance quite a purple hue to the ground in places from the spikes of flower. — CECIL H. SP. PERCEVAL.

HIPPOPHAE RHAMNOIDES IN SOMERSET (p. 249).—There is no need to go as far as Stert Point to explain the origin of this shrub on Burnham Sandhills. It has been planted in considerable quantity on land adjoining the Lighthouse,—close to the Links,—and has also been introduced at one or two other spots not far off. *H. rhamnoides* propagates largely by suckers, some of which I observed, when last at Burnham, five years ago, were pushing through the sandy soil outside the ground belonging to the Lighthouse.—DAVID FRY.

NOTICES OF BOOKS.

A Biographical Index of British and Irish Botanists. By JAMES BRITTEN, F.L.S., and G. S. BOULGER, F.L.S. 8vo, pp. xv, 188. London: West, Newman & Co. 1893. Price 6s. 6d. net.

ALL persons interested in the history of botany and of the botanists of these islands, but more especially those actively engaged in botanical work involving historical research, will welcome a reprint of the "Biographical Index" which ran through four volumes of this Journal, beginning in 1888. There have been delays, and some of us were getting anxious and beginning to fear that the promised re-issue would never appear; but this is not merely a reprint. Saying nothing of the "business" difficulties attending the reproduction of a work of this kind, which after all does not very directly appeal to a large number of the community; let anyone verify the references in one paragraph, and he will then be in a much better position to appreciate the amount of time and trouble expended upon it by the compilers, than if he had merely used the book for a whole year. Errors there are, of course, and omissions; yet I would rather emphasize the value of what it contains than indulge in pointing out deficiencies and shortcomings. As is stated in the preface, the original issue in the *Journal of Botany* comprised 1619 names, occupying 148 pages, whereas in its present form it contains 1825 names, covering 188 pages; so that there are considerable extensions as well as additions. The scope of the work may not be sufficient to meet all the wants of persons who are not within easy distance of a good library, but it should be remembered it only professes to be a finger-post. The editors say "it is intended mainly as a guide to further information, and not as a bibliography or biography. We have been liberal in including all who have in any way contributed to the literature of Botany, who have made scientific collections of plants or have otherwise assisted directly in the progress of Botany, exclusive of pure Horticulture. We have not, as a rule, included those who were merely patrons of workers, or those known only as contributing small details to a local Flora." From this paragraph it is clear

that a selection had to be made; there was no hard and fast line, consequently it depended upon opinion or upon the available information whether this or that person was considered to have a sufficient claim to appear in the list. It would perhaps have been as well to have put "deceased" in the title, because it is thus limited. To this limitation is doubtless due the absence of the names of certain persons, known promoters of Botany in their time, some of whom may indeed still be living, though they have long since disappeared from active life. Concerning all such doubtful cases, and including all those without actual knowledge or an authentic record--they are numerous—it is better to be silent. I will not even suggest a list, though an examination of the Index to the Hookerian Correspondence at Kew contains material—I mean in the sense of persons having an equal claim to be included and associated with the deceased British and Irish botanists.

However, we are on safer ground when we turn to persons certainly long ago deceased. William Cattley does not appear, and I do not understand why, even on the editors' own method of selection. I am reminded of this by some enquiries just received from Dr. E. Bretschneider, the well-known sinologue and historian of Chinese Botany. Cattley was manifestly something more than an ardent horticulturist. He had a garden at Barnet, where he cultivated many choice plants, among them a species of the beautiful genus of orchids named after him by his friend Lindley. Indeed Seemann (*Journ. Bot.* 1865, p. 385) would seem to have found some evidence that Cattley floated Lindley's *Collectanea*; and Braam's *Icones Plantarum China sponte nascentium* was apparently based on drawings in Cattley's library.

Another name not in the Index that occurs to me is Samuel Mason, of Yarmouth, who flourished at the beginning of the present century. In the Kew library are three small quarto volumes of coloured drawings of sea-weeds, with the following note, signed Dawson Turner, 1800, in the first volume:—"For the drawings contained in this volume I am entirely indebted to the delicate pencil of Mr. Samuel Mason, of Yarmouth, a most indefatigable collector, as well as a most accurate observer of these plants." Some of these drawings, I may add, are the original figures used by Turner in his *Synopsis of the British Fuci*. As I have already hinted, I could make a considerable list of omitted names; but I will only mention one more, and that is H. N. Moseley, the botanist of the 'Challenger' Expedition, who not only collected largely, but also published most valuable notes on the vegetation of many of the remote oceanic islands.

I have given a few examples of omissions in order to substantiate my criticism; but the immense amount of information brought to light concerning persons most difficult to trace,—information only to be found in the archives of the Botanical Department of the British Museum, and information extracted at a vast expenditure of time,—is deserving of all our praise and gratitude.

And this little book is, after all, the foundation, and a good substantial one, too, of the history of British and Irish botanists,

which may some day develop into as complete and exhaustive a work as Colmeiro's admirable *La Botânica y los Botánicos de la Peninsula Hispano-Lusitana*. No other nation, I believe, possesses such a work as the latter, and no second nation, so far as I am aware, just such a work as the former. W. BOTTING HEMSLEY.

ENGLISH LOCAL BOTANY.

Flora of South-west Surrey: including Leatherhead, Dorking, Guildford, Godalming, Farnham, and Haslemere. By S. T. DUNN, B.A. London: West, Newman & Co. 1893. 8vo, pp. vi, 106. Price 3s. net.

Memories of Malling and its Valley: with a Fauna and Flora of Kent. By Rev. C. H. FIELDING, M.A. West Malling, Kent: Oliver. 8vo, pp. vi, 291. Price 7s. 6d.

On the Flora of Gloucestershire. By J. H. BURKITT, B.A. 8vo, pp. 10.

THE modest claims and neat appearance of Mr. Dunn's little book prepossess the reviewer favourably, and an examination of the work confirms the first impression. It is "a portable field-guide, suitable for the study of Botany in South-west Surrey," in no way intended to supersede Brewer's Flora of the county, nor to forestall the new Flora by Mr. Beeby to which British botanists are looking forward. The district included is defined by Mr. Dunn as "bounded on the west and south by the county boundary; on the east by the Leatherhead, Dorking, and Horsham road; and on the north by the northern slopes of the chalk range. The actual limit of the latter is conveniently indicated towards the east by the Leatherhead and Guildford road which runs just inside the district. The outer edge of the Hogsback is sufficiently definite, and the same direction is continued beyond the western end as far as the Hampshire boundary."

The author has been fortunate in securing the help of the Rev. E. S. Marshall; there are evidences, however, of painstaking and a due appreciation of the relative importance of records which induce us to believe that in Mr. Dunn we have a valuable addition to the too small number of our younger British botanists. Among the indications of youth—the one defect which is certain to disappear as years roll on—we note an amiable tendency to extend to aliens a place in our Flora: thus *Hypericum calycinum* "may possibly be native in some localities near Dorking"; *Eranthis* was "formerly apparently wild in Albury Park"; Martyn's locality for *Anemone apennina* ("Woods about Shiere and Guildford") is quoted.

The abbreviations are trying—*e.g.*, "D." for De Crespigny's *New London Flora*, and "J. B." for this Journal—but Mr. Dunn has been anxious to economise space; this he could have done more satisfactorily by omitting the spurious "English names," such as "Cock's-foot Finger-grass" and "Axillary-clustered Sedge," and by allowing Primrose, Groundsel, Ragwort, and the like, to appear without the unnecessary prefix, "common."

But, as the trivial nature of these criticisms will show, we have nothing but praise for this conscientious little book, and the botanist who visits South-west Surrey cannot do better than take it in his pocket.

What are we to say of Mr. Fielding's well-intentioned effort? Well, as 248 pages are devoted to the history of Malling, and the whole natural history of Kent occcupies only 28 pages, of which the flora claims 15, we shall not be considered to err on the side of severity if we speak of it as inadequate. In some respects it is the most remarkable flora we have ever seen, for there are next to no localities; each plant, however, has an "English name," and "the greater number are found in the [Malling] district." Mr. Fielding has, we believe, lived in Kent for a great many years, and it is a thousand pities that he did not come under the influence of some capable botanist when he first began to notice plants. As it is, with the exception of a little local help and some localities from "Professor Holmes," he has been left to himself, and his acquaintance with books is most limited.

Here are three entries from the first page of the Flora, from which our readers can form their own judgment as to the character of the list:—

"Trollius Europaeus. — Globe-flower; a plant common in Kentish gardens, but I cannot find that it has been discovered wild in this county."

"Delphinium consolida.—Field Larkspur. The London catalogue gives Ajacis only. I have had the Larkspur forwarded from East Kent. Mr. Hepworth of Rochester has detected it. *The Faversham Floral*, published many years ago, mentions it, and Hooker also claims it for Kent."

"Aconitum napellus.—Monk's hood, common wolf bane. I have seen this plant growing where I had reason to think it a native, but, as it is a very common garden plant, it may have been an escape."

There are six Primulas in the list—*vulgaris*, *acaulis*, *caulescens*, *veris*, *elatior*, and *hybrida*—the last a comprehensive name for "the hybrid primroses between veris and vulgaris, veris and elatior, vulgaris and elatior, all found by the author in the woods around Cobham." *Verbascum hybridum* is similarly compounded. *Arbutus Unedo* appears in the list with the following note:—"Though common in some parts of Ireland as a wild tree, this shrub has never been acknowledged as an English native. In Kent, though only found in gardens and shrubberies, it, nevertheless, with two or three other trees (the evergreen or holm oak, the deodara, the Chilian or Araucanian pine, the cedar of Lebanon, and others), flourishes as if this were its native home. Perhaps it is merely reintroduced into what was once its original habitat." It is well for Mr. Fielding that H. C. Watson is no longer with us.

But we are sure that our author has the best of intentions, and the main part of the book (with which we are not concerned) shows that he is industrious. Perhaps Mr. Hanbury (who, we are glad to

assure Mr. Fielding, is not "the late") may enable him to turn his opportunities to useful account.

Mr. Burkitt's little paper—a mere ten pages of small type reprinted from the *Cheltenham Examiner* of May 17th—contains an excellent summary of the Gloucestershire Flora. It was read before the Cheltenham Natural Science Society; and is really a simple and pleasantly written essay on plant-distribution in Britain, with special application to Gloucestershire. In the last sentence we are told that "it is proposed to publish a reference list, indicating where each Gloucestershire plant is recorded"; this is good news.

An Introduction to the Study of the Diatomaceæ. By FREDERICK WM. MILLS. London: Iliffe & Son. 1893. Pp. xi, 243. 6 figs. of apparatus. Price 12s.

MR. MILLS has brought together the information contained in this book with the purpose of making more plain the path of students, especially those who have not access to expensive works, nor any guide to them. It would be very difficult to write a book about Diatoms without special appeal to the numerous, harmless, but eccentric class called microscopists, who seem to have marked Diatoms for their own.

This book may be divided into two parts: (1) the Introduction to the Study of the *Diatomaceæ*, and (2) a Bibliography. The introductory portion is largely concerned with apparatus for the study, but contains also information about the Diatoms themselves. That it is not illumined by any intense botanical light may be judged by the first sentence, "What are Diatoms? They are a family of Confervoid Algæ," &c. It is true that there are many things in nature less confervoid than Diatoms, but we need not give examples. In seventy-seven pages, the proofs of which the author cannot have read with any particular attention, we have this introduction set forth—a humdrum performance which may be useful enough to microscopists. Pages 78–240 are occupied with a "Bibliography relating to Diatomology, by Julien Deby, F.R.M.S., collected and arranged by F. W. Mills, F.R.M.S." It is true that the author in his preface acknowledges "with gratitude the generous assistance of Mr. Julien Deby," but his own collection and arrangement of the bibliography is a small affair. Mr. Deby contributed to De Toni's *Sylloge* a Bibliography of Diatoms up to 1891—a thorough and workmanlike performance. Mr. Mills has added to it references bringing it more or less up to date, including his own works, and even the work under notice, the first instance known to us of a book referring to itself in a bibliography. These additions are not serious in amount, and can hardly give their author title to claiming collection and arrangement of the whole. What he has done in addition is to permit numerous and gross misprints that do not exist in Mr. Deby's work. As an example of slavish copying, nothing better could be cited than a reference to Günther Beck's *Geschichte des Wiener Herbariums*, where in Mr. Deby's work the word "wichtigeren" is printed with a defective "h"

resembling "n." In Mr. Mills' work it duly appears "wientigeren." It is a trifle, but it exhibits the method of book-production in this case. It would be easy to cite stupid mistakes from the bibliographical point of view, but where so-called printer's errors, which are merely an author's carelessness, abound, this would be a waste of criticism. We are prepared to admit or to confess voluntarily that this bringing together of material may be of use, and will probably be of use, but it has been done with carelessness, and without merit.

G. M.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (Nos. 31, 32). — St. J. Golinski, 'Zur Entwickelungsgeschichte des Andrœceums und des Gynæceums der Gräser.'—(No. 33). K. Meinshausen, 'Ueber einige kritische und neue Carex-Arten der Flora Russlands' (*C. læviculmis*, *C. chloroleuca*, *C. mandshurica*, spp. nn.). — (No. 34). P. Kunth, 'Die Blüteneinrichtung von *Primula acaulis*.'—(No. 35). F. v. Herder, 'Die in St. Petersburg befindlichen Herbarien und botanischen Museen.'

Botanical Gazette (July 15). — D. M. Mottier, 'On the embryo-sac and embryo of *Senecio aureus*' (3 plates). — P. Dietel, 'New species of *Uredineæ* and *Ustilagineæ*.' — G. F. Atkinson, 'Biology of the organism causing leguminous tubercles' (4 plates). — C. Robertson, 'Flowers and Insects.' — (Aug. 10). J. S. Wright, 'Cell union in herbaceous grafting' (2 plates). — L. N. Johnson, 'Zoospores of *Draparnaldia*' (1 plate). — J. M. Coulter & E. M. Fisher, 'New and noteworthy N. American plants.'—A. F. Woods, 'Recent investigations on evaporation of water from plants.'

Bot. Magazine (Tokio).—(July 10). R. Yatabe, *Trillium Tschonoskii* Maxim. (1 plate).

Bull. de l'Herbier Boissier (No. 6).—F. Prévost-Ritter, '*Anemone alpina* & *A. sulphurea*' (1 plate).—H. Solereder, 'Zur anatomischen Charakterisk und zur Systematik der Rubiaceen.'—E. Hutt, 'Neue Arten der Gattung *Delphinium*' (4 plates).—(No. 7). E. de Wildeman, 'Le Genre *Pleurococcus*' (*P. nimbatus*, sp. n.: 1 plate).—R. Chodat & G. Balicka, 'Sur la Structure des Tremandracées.' — R. Chodat, 'Polygalaceæ novæ.' — R. Chodat & G. Hochrentiner, 'Le Genre *Comesperma*.' — C. Roulet, 'Du genre *Thunbergia*.' — J. Briquet, 'Du genre *Galeopsis*.' — J. Weyland, 'Zur anatomischen Charakteristik der Galegeen.'

Bull. Soc. Bot. France (xl. Comptes rendus, 2).— —. Boulay, 'De la marche à suivre dans l'étude des *Rubus*.' — E. Mer, 'Le Balai de Sorcière du Sapin.'—Id., 'Le brunissement des feuilles de Sapin.'—'E. Gain, 'Sur la matière colorante des tubercules.'—H. Coupin, 'Sur les variations du pouvoir absorbant des graines.'—P. Duchartre, 'Sur les aiguillons du *Rosa sericea*.'— —. Barratte, 'Les *Doronicum scorpioides* & *Linum austriacum* existent-ils en Algérie?'—L. Mangin, 'Sur l'assise à mucilage de la graine de Lin.'

Bull. Torrey Bot. Club (July). — N. L. Britton, 'New or noteworthy N. American Phanerogams' (1 plate). — E. P. Sheldon, 'Notes from Minnesota State Herbaria' (1 plate).—J. M. Holzinger, '*Hartwrightia floribunda*' (1 plate).—Id., 'Winter Buds of *Utricularia*' (1 plate). — C. A. Davis, '*Nasturtium Armoracia*.' — J. E. Peters, 'Flora of Southern New Jersey.' — T. D. A. Cockerell, 'Fungi collected in Jamaica.'

Erythea (August). — W. P. Gibbons, 'The Red-wood in the Oakland Hills.'—E. L. Greene, 'Vegetation of Mount Diablo.'

Gardeners' Chronicle (July 29). — *Dipladenia eximia* Hemsl., sp. n. — (Aug. 5). *Hymenocallis concinna* Baker, *Polystachya Lawrenceana* Kränzlin, spp. nn.—(Aug. 12). J. G. Baker, 'The Ferns of New Zealand.' — *Dorstenia Walleri* Hemsl., sp. n. — (Aug. 19). '*Azolla filiculoides*' (fig. 37).

Irish Naturalist (Aug.).—N. Colgan, 'The Shamrock: a further attempt to fix its species.' — R. Ll. Praeger, 'Flora of County Armagh.'

Journal de Botanique (Aug. 1). — E. G. Camus, 'Monographie des Orchidées de France.' — L. Guignard, 'Sur le développement de la graine.' — P. Hariot, '*Chroolepus lageniferum* en France.'— (Aug. 16). A. Franchet, 'Sur quelques nouvelles *Strophanthus*.'— —. Sacleux, *Arduina tetramera*, sp. n.

Journ. Linnean Soc. (xxx. No. 205: Aug. 28).—M. T. Masters, 'Notes on Genera of *Taxaceæ* and *Coniferæ*.'—C. B. Plowright & W. Thomson, 'Life-history of the Æcidium on *Paris quadrifolia*.'— M. F. Ewart, 'Abnormal *Cypripedium* Flowers' (2 plates). — J. C. Willis, 'Fertilization of *Claytonia*, *Phacelia*, and *Monarda*' (1 plate).

Oesterr. Bot. Zeitschrift. (Aug.). — L. Celakovsky, 'Ueber die Narbenlappen von *Iris*,' & 'Ueber die Blüthenstände der *Quercus ilicifolia*.' — H. Zukal, 'Mykologische Mittheilungen.' — R. H. Franzé, 'Ueber einige niedere Algenformen.'

BOOK-NOTES, NEWS, &c.

The death, on July 2nd, of the Rev. Henry Hugh Higgins at his residence in Liverpool has deprived that city of one of its most useful men. For a long series of years he has been Chairman of the Museum Sub-Committee of Management, and has devoted many hours weekly to the classification and arrangement of the collections in the possession of the city. Every visitor to the Museum must have been struck with the admirable labelling of the specimens, and for this Mr. Higgins is mainly to be thanked. He was born at Turvey Abbey, Bedfordshire, Jan. 28, 1814, and graduated at Cambridge in 1836. He then took orders in the Established Church, and after holding various posts, became chaplain to the Rainhill Asylum, Liverpool, in 1853, a post which he retained until 1886. Mr. Higgins had a general acquaintance with natural history, and the Royal Society's Catalogue enumerates several botanical papers from his pen. A sketch of his active life will be found in the

Geological Magazine for August, to which we are indebted for some of the above particulars.

ANOTHER veteran naturalist, Mr. FRANCIS POLKINGHORNE PASCOE, died on June 20th. He was born at Penzance, Sept. 1, 1813, and educated for the medical profession. He became M.R.C.S. in 1835, and subsequently entered the Navy as assistant-surgeon, visiting Australia, New Zealand, and the West Indies. In 1843 he left the service, and settled down in Cornwall. After 1851 he removed to London, and formed an important entomological collection. Entomology, indeed, was the study of his life, although his first published paper was on "Cornish Plants not included in *Cybele Britannica*," published in the *Botanical Gazette* for 1850, and he was a member of the Botanical Society of London. He always retained his interest in botany, and was a well-known figure at the Linnean Society and at the Natural History Museum. The above information is taken in part from *Natural Science* for August, from which, by the way, we learn that the note in reference to this Journal, to which we ventured to take exception (p. 223), was intended to be "playful, but complimentary." The Editor of *Natural Science* is evidently of opinion that "language was given us to conceal our thoughts."

MESSRS. SANDER advertise, as "new and sensational," the rare Orchid *Eulophiella Elisabethæ*, and add, "Mr. R. A. Rolfe, the *author and creator* of this new genus, has examined our plants, and certified them true." There has been so much discussion as to the "origin of species," that it is satisfactory to find at least one genus of which the origin can be definitely stated.

THE first part of the *Grasses of the Pacific Slope* was issued last October, and has already been noticed in this Journal (1893, p. 62). The second, which is dated June 1st, must have been the last work on which Dr. Vasey was engaged before his death on March 4th, the letter of transmittal bearing the date of February 11th. Fifty species are figured and described; of these very few have been figured before, while many are new. Thus, of the fifteen Poas, four are new species, and one is a new variety. There are also alterations in the nomenclature of others. No. 74 is *Poa Fendleriana* (Steud.) Vasey in the text, *Eragrostis Fendleriana* Steud. following as a synonym; the name on the plate is, however, *Poa californica* Vasey, by which the author states it is most widely known, though this does not appear in the synonymy at the head of the description. Similar discrepancies occur elsewhere; No. 78 is in the text *Poa Howellii* Vasey & Scribner, n. sp., while on the plate it is ascribed to the former author alone. In the same way *Pleuropogon californicum* Vasey becomes *P. californicum* Benth.; and the same transformation occurs in the next species, *P. refractum*. A few signs of want of care in revision of the proofs are noticed, such as omission of an indicating letter, or, as in No. 73, where the dissections of *Poa Bolanderi* are wrongly described. Moreover, why write *Poa Thurberiana* (O. K.) Vasey for a species originally described in the *Botany of California* as *Atropis pauciflora*, changed for purely historical reasons by Otto Kuntze to *Panicularia Thurberiana* (there being already a *P. pauciflora*), and now for scientific

reasons placed by Vasey in *Poa?* Save for these few objections, we have nothing but praise for the work of Dr. Vasey and his assistant, Mr. Dewey. The descriptions are full, and the plates well arranged; the latter not always an easy matter with grasses.

Mr. W. H. Pearson, 3, The Polygon, Eccles, is preparing a work on British Hepaticæ, and will be glad to receive records additional to those given in the *London Catalogue* (1881).

The *Kew Bulletin* for July contains several descriptions of new plants, including a decade of orchids, various economical notes, and a list of distinguished persons who attended "a large garden party" given in "the reserve part of the Royal Gardens" by the First Commissioner of Works.

Prof. E. L. Greene tells us, in *Erythea* for August, that "Part i. of the *Index Kewensis*, dealing with the nomenclature of all known flowering plants, has just been issued in London. It had been confided that such a work was in progress at the Kew Herbarium, and the promise of its publication excited curiosity and interest in many quarters." We in London have not yet heard of the publication of Mr. Jackson's great work, with the progress of which the readers of this Journal have been kept tolerably well acquainted.

The Department of Agriculture, Brisbane, has issued a pamphlet of 108 pages, entitled *A Companion for the Queensland Student of Plant Life*. Mr. F. M. Bailey, the author, has "aimed at combining with a glossary a view of plant life in general." Closely printed, in too small type and in double columns, the glossary contains a vast amount of miscellaneous information, and, like most glossaries, a large number of words which are by no means familiar—such as "tephrosius—of an ash-grey colour"; synochorion—synonym for carcerulus"; "rhodoleucus, a combination of red and white"; "obligate, necessary, essential." Some definitions require correction, as "infractus, much broken: synonym for inflexus": "hilaris, belonging to the hilum"; and there are various matters which one hardly expects to find in a glossary, such as "Hyacinths in glasses," "Bordeaux mixture," and the like. But there is a great deal of useful matter, and no doubt the next edition will be an improvement on the present.

We have not yet been able to ascertain any particulars of the death of Mrs. John Pearless, which took place, we are informed, on July 27th, at the age of eighty-seven. Under her maiden name, Anne Pratt, she was the author of a large number of popular and in the main accurate books about plants, chiefly British ones.

The Journal of the Royal Horticultural Society is gaining in general interest. The August number contains Dr. F. W. Oliver's second report "On the Effects of Urban Fog upon Cultivated Plants," a paper by the Rev. G. Henslow "On some Effects of growing Plants under Glasses of various colours," a note by Dr. Bonavia on the "Antiquity of the Citron-tree in Egypt," and other essays principally of horticultural interest. The *Journal* in its present form reflects great credit upon Messrs. Wilks and Weathers, the Secretary and Assistant-Secretary of the Society.

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SOUTH KENSINGTON.

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GILBERT WHITE'S SELBORNE PLANTS.

By the Editor.

Among the omissions from our *Bibliographical List of British and Irish Botanists*, none is less justifiable than that of Gilbert White. Yet at the time we did not think his Letter xli to Barrington, dealing with the "more rare" plants of Selborne, entitled his name to inclusion, although we certainly admitted other names who had no greater claim than such a letter gives. We had not then noted that Mr. Bell, in his edition of *Selborne* (ii. 369: 1877), said that he possessed a catalogue of Selborne plants "in the handwriting of Gilbert White," which he embodied in the list which he gave.

By the kindness of the Rev. Canon Gordon, its fortunate possessor, I have lately seen a copy of Hudson's *Flora Anglica* (1762), which shows conclusively that White was well acquainted with the plants of his locality. The book has White's autograph on the flyleaf, with the date 1765. Facing the title is the following note in White's hand: "The plants marked thus × have all been found within the parish of Selborne in the county of Southampton." He evidently used the book a great deal, for there are several corrections of references, figures, &c., by him, which are not found in the printed list of errata. But the only MS. notes other than these are the words "the candle rush" added to *Juncus conglomeratus* (p. 129); an entry of *Blackstonia* on p. 88—"Gentiana corollis octofidis, foliis perfoliatis: vid. p. 146"; and the addition to *Prunus Avium* of the names "vulg. mery: Fr. merise."

The volume afterwards came into the possession of "T. Rutger, Clowance," who employed it as White had done, indicating the plants he found by a circle. There is no entry of this in the book, but Miss Agnes Martelli infers it from the fact that *Erica ciliaris* is among the plants thus marked, and I find further confirmation in the marking of the "naked oats or pilcorn," which are characteristic of Cornish cultivation. Rutger, as a later entry testifies, presented the book to Mr. Philip Beal in 1846. It subsequently came into the hands of a Plymouth bookseller, from whom Canon Gordon purchased it shortly after the White centenary on June 24th.

The enumeration contains 439 species, and is not therefore exhaustive, although it must be remembered that in 1762 our list was much less extensive than it is at present. One additional plant—*Vaccinium Oxycoccos*—I find in Mr. Bell's list already referred to on White's authority, raising the number to 440. I think it may be of interest to print this list, and in so doing I have implicitly followed Hudson's order and nomenclature. Most of the names will be easily recognised.

Callitriche verna
Ligustrum vulgare
Veronica officinalis
serpyllifolia
Veronica Beccabunga
chamædrys
arvensis
agrestis

Lycopus europæus
Circæa lutetiana
Anthoxanthum odoratum
Valeriana officinalis
dioica
Locusta
Iris Pseudacorus
Schœnus albus
Eriophorum polystachion
Phleum pratense
nodosum
Alopecurus pratensis
Dactylis glomeratus
Agrostis capillaris
Aira cæspitosa
Melica nutans
Briza media
Poa trivialis
annua
Festuca ovina
fluitans
sylvatica
Bromus secalinus
sterilis
giganteus
pinnatus
Avena fatua
elatior
Arundo phragmites
Calamagrostis
Lolium perenne
Triticum repens
Cynosurus cristatus
Montia fontana
Dipsacus sylvestris
pilosus
Scabiosa succisa
arvensis
columbaria
Plantago major
media
lanceolata
Sherardia arvensis
Asperula odorata
cynanchica
Galium verum
Mollugo
Aparine
Cornus sanguinea
Aphanes arvensis
Potamogeton natans

Myosotis scorpioides
Lithospermum officinale
arvense
Cynoglossum officinale
Pulmonaria officinalis
Symphytum officinale
Borago officinalis
Lycopsis arvensis
Echium vulgare
Primula vulgaris
veris
Menyanthes trifolia
Lysimachia vulgaris
nemorum
Nummularia
Anagallis arvensis
Convolvulus arvensis
sepium
Verbascum Thapsus
nigrum
Vinca minor
Hyoscyamus niger
Solanum nigrum
Dulcamara
Lonicera Periclymenum
Campanula rotundifolia
Trachelium
glomerata
Rhamnus catharticus
Euonymus europæus
Ribes rubrum
Hedera Helix
Gentiana Amarella
Centaurium
Cuscuta europæa
Chenopodium Bonus-Henricus
album
Ulmus campestris
glabra
Hydrocotyle vulgaris
Sanicula europæa
Caucalis arvensis
Daucus Carota
Conium maculatum
Heracleum Sphondylium
Angelica sylvestris
Sium nodiflorum
Sison Amomum
Oenanthe fistulosa
Bunium Bulbocastanum
Seselia Carvifolia

Æthusa Cynapium
Scandix Pecten ♀
Chærophyllum sylvestre
temulum
Pastinaca sativa
Pimpinella Saxifraga
Apium graveolens
Ægopodium Podagraria
Viburnum Lantana
Opulus
Sambucus nigra
Ebulus
Alsine media
Linum catharticum
Radiola
Drosera rotundifolia
longifolia
Berberis vulgaris
Allium vineale
Narcissus Pseudo-Narcissus
Hyacinthus non scriptus
Narthecium Ossifragum
Juncus conglomeratus
effusus
bulbosus
bufonius
Rumex sanguineus
acutus
obtusifolium
Acetosa
Acetosella
Alisma Plantago △
Epilobium angustifolium
ramosum
Vaccinium Myrtillus
Erica vulgaris
cinerea
Tetralix
Daphne Laureola
Mezereum
Blackstonia perfoliata
Polygonum Bistorta
Persicaria
Hydropiper
aviculare
Convolvulus
Fagopyrum
Adoxa Moschatellina
Paris quadrifolia
Monotropa Hypopithys
Chrysosplenium oppositifolium
Saxifraga trydactylites
Scleranthus annuus
Saponaria officinalis
Cucubalus Behen
Stellaria Holostea
graminea
Arenaria trinervia
rubra
Sedum Telephium
reflexum
acre
Oxalis Acetosella
Agrostemma Githago
Lychnis Flos cuculi
dioica
Spergula arvensis
Agrimonia Eupatoria
Euphorbia Peplus
exigua
Helioscopia
platyphyllos
Amygdaloides
Sempervivum tectorum
Prunus insititia
spinosa
Avium
Cerasus
Cratægus Aria
torminalis
Oxyacantha
Pyrus Malus
Spiræa Ulmaria
Rosa arvensis
canina
Rubus cæsius
fruticosus
Fragaria vesca
sterilis
Potentilla Argentina
reptans
Tormentilla erecta
Geum urbanum
Comarum palustre
Chelidonium majus
Papaver Rhoeas
Tilia europæa
Cistus Helianthemum
Aquilegia vulgaris
Anemone nemorosa
Ranunculus Flammula
repens

Ranunculus bulbosus
acris
arvensis
hederaceus
Ficaria verna
Caltha palustris
Helleborus foetidus
viridis
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Betonica officinalis
Mentha longifolia
arvensis
aquatica
Glechoma hederacea
arvensis
Lamium album
rubrum
Galeopsis Ladanum
Tetrahit
Galeobdolon
Stachys sylvatica
palustris
Ballota nigra
Marrubium vulgare
Leonurus Cardiaca
Clinopodium vulgare
Origanum vulgare
Thymus serpyllum
Melissa Calamintha
Prunella vulgaris
Scutellaria galericulata
minor
Lathræa squamaria
Rhinanthus Crista galli
Euphrasia officinalis
odontites
Melampyrum sylvaticum
Pedicularis sylvatica
palustris
Antirrhinum Elatine
spurium
Linaria
minus
majus
orontium
Scrophularia nodosa
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Draba verna
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pratense
robertianum
molle
Malva sylvestris
rotundifolia
Alcea
Fumaria officinalis
Polygala vulgaris
Spartium scoparium
Genista tinctoria
anglica
Ulex europæus
" " β
Ononis spinosa
arvensis
Anthyllis Vulneraria
Orobus tuberosus
Lathyrus sylvestris
pratensis
Vicia cracca
sepium
sativa
Ervum tetraspermum
Ornithopus perpusillus
Hedysarum Onobrychis
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pratense
arvense
agrarium
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palustre
fluviatile
limosum
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Adiantum nigrum
Polypodium vulgare
Filix mas
F. foemina
aculeatum

Polypodium lobatum
cristatum
Polytrichum commune
Lichen candelarius
capreatus
resupinatus
sylvaticus
pyxidatus
rangiferinus
Tremella Nostoc
Agaricus Chantarellus
integer
Agaricus lactifluus
campestris
verrucosus
Boletus versicolor
igniarius
luteus
Phallus impudicus
Clavaria pistillaris
ophioglossoides
Lycoperdon Tuber
Bovista

NOTES ON POTAMOGETONS.

By Arthur Bennett, F.L.S.

(Continued from p. 134.)

The nomenclature of some of the species of *Potamogeton* is difficult to deal with satisfactorily; I propose here to discuss *P. tenuifolius*. Three distinct plants have been so named:—*P. tenuifolius* Rafinesque, *Med. Rep.* 409 (1311); *P. tenuifolius* H. B. K. *Nov. Gen. et Sp.* i. 297 (1815); *P. tenuifolius* Philippi, ined., in herb. Berlin, et in litt.! (1864).

Of the first of these we have no definite information; the only suggestion one can make is that it was either a form of *P. alpinus* Balbis, or of *P. heterophyllus* Schreb. But should it prove something different from these, the name must stand.

P. tenuifolius H. B. K. must be referred to *P. pectinatus* L. as a variety.

The doubt about Rafinesque's plant renders it inadmissible to adopt Philippi's MS. name, although the plant to which he gives it is a good species. I therefore propose to name it *P. Aschersonii*,* after Prof. Ascherson, who has added so much to the knowledge of the marine genera of the order.

Its affinity is with *P. pusillus* L. and *P. Berteroanus* Philippi in *Linnæa*, xxx. 200 (1859-60). It varies considerably in its leaves, but so many of the South American specimens of the *pusillus* group are badly preserved, that without "soaking out" it is difficult to determine their true character.

I refer to it the following gatherings:—Chili, *Philippi*! Valparaiso, *Bridges*! Argentina, *Hieronymus*! *Tweedie*!? Uruguay, *Gibert*! Columbia, *Jameson*! Brazil, *Gardner*! Prov. Rio de Janeiro, *Glaziou*!

P. Aschersonii mihi. *P. tenuifolius* Philippi ined. Stems slender, terete, 6–18 in. long, branched, especially in the lower half; rarely with long (3–4 in.) internodes. Leaves variable,

* I have ascertained from Prof. Ascherson that he has not named the plant, as I thought he might have done, for the *Fl. Brasiliensis*.

linear, 1–3 in. long, 1–1½ in. broad, 3-veined; the outer slender veins connected with the midrib by very fine irregular cross-veins; subacute. Stipules soon decaying, 6–9 lines long, yellowish white, those enclosing the peduncles more persistent and broader. Peduncles slender, equal, 1½–2¼ in. long; spikes 4–6 lines long, with 6–9 fruits. Sepals ovate, with a rounded base. Fruit 2¼ lines by 1½ in. broad, ovate (or slightly obovate), nearly flat on the sides, and impressed with a shallow depression; the 3 keels sharply defined by raised lines on the smooth surface of the ventral face of the fruit, and without any tubercules; beak prominent on the dorsal side of the medial line. Embryo-apex nearly touching the basal end.

P. SPIRILLUS Tuckerman in *Sill. Journal*, 2nd series, vol. vi. p. 228 (1848). Dr. Morong, in his *Mon. Fl. American Naiad.*, queries my reference of *P. Zetterstedtii* Wallman (Schl. & Mohl. *Bot. Zeit.* i. 256 (1843), as belonging to the above plant. While fully believing it does so, I cannot say I have seen a specimen to prove it. But it is of secondary importance, if I am right in believing that Tuckerman's plant must bear the name of *P. dimorphum* Rafinesque in *Month. Mag. & Critical Review*, p. 358 (1817).

Barton (*Fl. Philad. Prod.* (1815)) names a new species *P. diversifolius* (it is doubtful whether he knew of the publication of Rafinesque in 1808 of the same name), and says it is distinct from *P. hybridus* Michx. (1803). In 1823, in his *Flora of N. America*, t. 84, vol. iii., he figured his species, and the plate seems to me to represent *P. spirillus*, if there is any difference between that and *P. hybridus* as species. Rafinesque, reviewing Barton's *Flora* (1815) in *Monthly Mag. & Critical Review* of 1817, remarks that his (Barton's) plant is different from his *diversifolius*, and hence from *hybridus* of Michx., and preferred the name *P. dimorphum* for it; and it seems to me that it must bear that name, and that Tuckerman's becomes a synonym.

As Dr. Morong uses *P. diversifolius* Raf. for *P. hybridus* Michx., because the latter had been used by Thuillier (or rather Pentagna) for *P. heterophyllus* Schreb., it follows that Barton's *diversifolius* will become a synonym of *P. dimorphum* Raf.

But the "law" that is desired to be forced on us, "that any species or variety that has been so named, under any other species or variety, cannot be used in the same genus," will be of somewhat difficult application. Students certainly will never know, and even monographers will not be safe, as proved by Dr. Morong's own work, where he must (by his own law) change the names of at least three of his species, having failed to ascertain that they were in use before.

Most of the American authors (Gray, &c.) refer Barton's *diversifolius* to *P. hybridus* Michx.; but I do not see how this could have been done with Barton's plate in existence, and his and Rafinesque's positive declaration to the contrary. These facts cannot be put aside by any suggestion of looseness of naming, &c.

P. FLUITANS Roth, *Fl. Germ.* i. p. 72 (1788): ii. p. 202. In his recently published Monograph, Dr. Morong remarks that he hesitates to identify *P. Lonchites* of Tuckerman with the plant usually

considered among European botanists as Roth's, and gives excellent reasons for his hesitation.

I have been for some time trying to unravel the difficulties that surround the question, and offer these remarks as a contribution to the subject, though I doubtless may have been too venturesome in some of the results given. We have no certain knowledge of any specimen of Roth's species being preserved in any herbarium; but there are at Munich specimens in Schreber's herbarium, named as such, and gathered "In Seebach, 1775," and others, "In Seebach, 1782." It seems to me a reasonable inference that these specimens are from (or seen by) Roth; the more so because there are other species in the same collection actually received from Roth, and signed by him. They are the plant we call *fluitans* in England (hybrid?), and not the Neckar plant of Schimper and Dr. Tiselius.

But Dr. Morong's remarks that specimens sent to him from France under Roth's name have fruit "totally dissimilar" from the Necker plant sent him by Dr. Tiselius. This makes the matter more difficult of elucidation. I have looked through all the French specimens I can get access to, but I can find no more difference than state of maturity would show. French specimens from the Loire (*Lloyd*) are precisely our plant. A specimen from "Varde, leg. Hempel," which (except that it has no fruit) might well have been gathered in the United States as *Lonchites*.*

After comparing the whole of the specimens I possess in fruit named *P. fluitans* Roth, I cannot discover any real difference, except such as proceeds from degrees of ripeness. Not having seen Dr. Morong's French specimens, I can offer no explanation; these must be cleared up some other time.

Looking beyond Europe, I find that Algerian specimens gathered by Bové and others must go to the Necker plant. But others from Abyssinia have fruit much larger and dissimilar, and may be, and probably are, an undescribed species. Egyptian specimens in fruit come, as to size of fruit, about half-way between the Algerian and Abyssinian specimens, but the shape is as in the Algerian. Specimens from India, "Punjaub, India, alt. 1000 ft., Hook. fil. et Thom.," seem to me the same as the European plant.

South American specimens named *P. fluitans* Roth, I believe to be utterly impossible to refer with safety, unless in fruit. The dried foliage of my *P. mexicanus* is so like these that it is impossible to name them without fruit. The variation in the leaves in this group is so great that no value can be laid upon specimens named, unless in fruit.

From Australia I have seen nothing that could be referred to *fluitans*. In Polynesia, of the two species named by Chamisso

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* Specimens communicated by Maximowicz under the name of *P. fluitans* Roth, gathered by Maack "Ad ostium fl. Lena, Siberia," I find to belong to my *P. Tepperi*; it also occurs in China. "Yun-nan, Abbé Faure," in herb. Paris. It may be that a desire not to unduly multiply species has led me to combine two plants under that name, there being some difference in the fruits; but marked alteration takes place in the fruits from half to full maturity, so that much caution is needed not to describe merely conditions of growth.

P. O-waihensis and *P. marianensis*, the former was founded on specimens without fruit; the latter has immature fruit, not unlike the figure of that of the var. *stagnatilis* Koch of Reichenbach's *Icones*, but with two teeth at the base of the side of the fruit, and another at the base of the keel. Kunth, *Enum.* iii. 128 (1841), places all these species of Chamisso under *P. natans* L.; but the form of the leaves refers them to the *fluitans* group.

It may be asked (considering the great advance made in the study of the essential characters of plants of late years), are there not other characters that may be used beyond the old ones? The answer to this is, there are indications of such; but, as in all new things, caution, wide application, and continuous use are needed before these can be advanced as more than theoretic.

The figure of the fruit of Koch's var. *stagnatilis* in Reichenbach's *Icones* has to me always been a puzzle; authentic examples of Koch's plant show no such elongated beak; perhaps they were drawn from immature examples?

I propose the following nomenclature as the best that can at present be adopted for this section:—

1. P. FLUITANS Roth et auct. plur. The barren plant generally so named. Europe generally. Beyond Europe I have no certain examples that can be clearly placed here.

2. P. AMERICANUS Chamisso, *Linnæa*, ii. 226 (1827). *P. Richardii* Solms in herb. Buchenan! *P. Lonchites* Tuckerman, *Am. Journ. Sc. & Art*, 2nd Ser., vol. i. 226 (1848).—Var. *stagnatilis* Koch (under *fluitans*). Europe! — Var. *Novæboracensis* Morong (under *Lonchites*). N. America! Sparingly in Europe. Italy! Germany, *Oberschesin*! Heidelberg! Bruckhulm! Aargan! Silesia! Switzerland (Jura), *Michalet*! Asia. Armenia, *Radde*! India. Punjaub! Africa. Algeria! Egypt! Socotra? America, N. Distributed from Canada! Brit. Columbia; southwards to Florida! New Mexico! and Porto Rico! From the Eastern States, westward to Kentucky! Texas! California!

Perhaps a better plan would be to give the Necker plant a new name, and place *Lonchites* Tuck. as a variety of it, or to consider *americanus* a subspecies; but I am unwilling to give new names until good and sufficient reason can be found for so doing. We shall doubtless in time obtain material to help in elucidating the obscure points in the history of *P. fluitans* Roth.

(To be continued.)

BIBLIOGRAPHICAL NOTES.

II.—'BOTANY OF BEECHEY'S VOYAGE' AND 'FLORA OF NORTH AMERICA.'

IN consequence of the printing of the dates of publication of the parts of Hooker's *Flora Boreali-Americana** a short time ago, I

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* In *Bull. Herb. Boiss.* i. (1893), p. 298.

have received two letters from the United States, asking if I could ascertain the dates of issue of Hooker & Arnott's *Botany of Beechey's Voyage* in the 'Blossom,' and of Torrey & Gray's *Flora of North America*. I have replied in general terms to my correspondents, but should like to put the facts which I have been able to get together on permanent record.

The copy of Torrey & Gray in the library of the British Museum, Bloomsbury, is in its original buff paper wrappers, and from this I can submit the following statement as accurate, so far as the dates are correctly set out on these wrappers :—

Vol. i., Part 1, pp. 1–184, July, 1838.
,, Part 2, pp. 185–360, October, 1838.
,, Part 3, pp. 361–544, June, 1840.
,, Part 4, pp. 545–698, Index (711), Title, &c., pp. xiv., Errata, June, 1840.
Vol. ii., Part 1, pp. 1–184, May, 1841. The wrapper has no printing on it, but I have taken the date from *Silliman's Journal*, xli. (1841), p. 275.
,, Part 2, pp. 185–392, April, 1842.
,, Part 3, pp. 393–504, February, 1843.
No more issued.

The case of Hooker & Arnott is not so easy, for I have not succeeded in finding any copy with the original wrappers, and the following dates can only be taken as probable; if any reader of the *Journal of Botany* has access to such a copy, and would communicate to me the actual printed dates, I should be extremely obliged.

There is no difficulty in ascertaining the date of the first part, as several announcements concur; thus in *Linnæa* the issue is given as containing pp. 1–48, with ten plates, and came out in 1830. As I have failed to find more than occasional allusions during the progress of the work, I have pieced together all such indications, and assuming that each part was of the same dimensions as the first, I have referred to Pfeiffer's *Nomenclator* for the dates of all new genera as below, as the dates therein given must have been gathered from some copy :—

Part 1, pp. 1–48, in 1830 (as above).
,, 2, pp. 49–96, in 1832 (*Pterochilus*).
,, 3, pp. 97–144, in 1832 (*Adenostoma*).
,, 4, pp. 145–192, in 1833 (*Layia*; see also Torr. & Gray, ii. 392, in confirmation).
,, 5, pp. 193–240, in 1836 (*Anisopappus*).
,, 6, pp. 241–288 (no indication of date, owing to the absence of any new genus).
,, 7, pp. 289–336, in 1840 (*Heterocentron*, &c., and several cited by Endlicher in that year).
,, 8, pp. 337–384, in 1840 (*Atenia*, &c.).
,, 9, pp. 385–432, in 1841 ? (*Grayia*, &c., cited by Endlicher, in 1842).
,, 10, pp. 433–(486), in 1841 (*Sinclairia*).

The latter half of the work is especially open to doubt, for *Silliman's Journal*, xxxix. (1840), pp. 172–3, states that parts 9, 11 and 12 came out in 1839 or 1840, the twelfth being the conclusion; and, if correct, this shows that the latter parts were not of the same dimensions as the first part. It is in this direction that I seek for further information from any botanist or librarian who can enlighten me.

B. Daydon Jackson.

A SKETCH OF THE BOTANY OF IRELAND.*

By A. G. More, F.L.S.

The Flora of Ireland, as distinguished from that of the rest of the Continent of Europe, is remarkable from the presence of a few striking species which do not occur in Great Britain nor in Northern Europe. Nearly all of these plants may be classed as Western and South-western in Ireland. Several of them are very abundant in their Irish stations. For instance, *Daboecia polifolia*, a striking and handsome species, occurs plentifully throughout Connemara and the barony of Murrisk, in Western Mayo; in fact, through the whole district lying between Galway Bay and Clew Bay. This and *Erica mediterranea* are two of the most characteristic plants of the Irish flora; and, with *E. Mackaii*, constitute a very striking group of species, whose head-quarters are to be found in Portugal and Spain. It is to be remarked here that, curiously enough, not one of these three heaths is found in Clare, or Kerry, or Cork—for the South-west of Ireland has also its own distinct group of plants, most of which do not occur further north. In fact, the peculiarly "Irish" species arrange themselves under four groups.

I.—American Species.

Plants which are much more plentiful in North America, and for the most part do not occur on the European Continent. These may be considered as the remains of a former land connection with America, and were probably driven southwards during the glacial epoch from the shores of Greenland; at any rate, from the land which, at that time, joined America to Europe; and these may be held to be more or less Arctic species, as well as Americo-European.

The best known of these North Americans is the rare orchid *Spiranthes Romanzoffiana*, which in Europe occurs only in the few scattered localities in the counties of Cork, Armagh, and Derry—near Berehaven, and also in the valley of the Bandon river.

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* [This sketch is reprinted from an excellent shilling handbook—the *South of England Pictorial Guide*, recently published by Messrs. Gay & Co., of Cork. The Guide also contains articles by competent authorities on other branches of natural history, and is in this respect an important advance upon similar works. Mr. More has made one or two corrections in the reprint, which has been slightly curtailed in unimportant particulars.—Ed. Journ. Bot.]

Another North American plant is the so-called "Blue-eyed Grass" of Canada (*Sisyrinchium angustifolium*), which grows in great abundance between Woodford and Lough Derg, in Galway, and has recently been found near Milltown and Killorglin, and sparingly in a few other scattered localities in Kerry. A third notable plant of the American group is *Juncus tenuis*, which Mr. R. W. Scully found in several places along the estuary of the Kenmare river; a very scarce and local species anywhere in Europe, and in Britain occurring only in Renfrew, Dumbarton, and Kirkcudbright; in North Wales; and in a single station in Herefordshire. The *Sisyrinchium* has given much trouble to botanists, for it is difficult to decide whether it should be considered a native,—*i. e.*, as having reached Ireland before the advent of man,—or whether it may have spread originally from gardens, as it is a plant which has shown elsewhere extraordinary powers of spreading where it has once been introduced. Still, whatever may be said of this last species, there is no doubt that *Spiranthes Romanzoffiana* is truly native; and the unexpected discovery of a new Irish locality in Armagh lends some support to the theory of its Arctic origin. We may assume that it arrived before or during the glacial period on two separate points of Ireland,—Cork and Armagh,—both situated not far from the sea-coast.

One more American species, quite lately observed in Kerry, is *Polygonum sagittifolium*, which was discovered only two years ago near Cahirdaniel, Co. Kerry, by Mr. Scully, but he does not consider it a native plant. With these may also be classed *Naias flexilis*, found in Galway and Perthshire, as well as in Carah and Killarney Lakes, and *Eriocaulon septangulare*, which occurs on the west coast of Ireland from Donegal to Cork.

We have next to enumerate the Western and South-western species, which, in the British Isles, find their head-quarters in Cork and Kerry, and extend also to the European continent. These are *Saxifraga umbrosa*, *S. Geum*, and, if it can be reckoned as a third species, *S. hirsuta*. The first reaches to the north of Donegal, and eastward to the Cummeragh and Knockmeildown mountains of Waterford; and thus is the most widely distributed of the whole West Irish group. *S. Geum* and *S. hirsuta* (the latter probably only a variety) are found in Cork and Kerry only, and keep at a lower level than *S. umbrosa*, which, in Ireland, as well as in Spain, appears quite at home among the alpine species.

The West Irish species may be conveniently arranged under the three following groups:—

II.—Plants distributed along the West Coast from Galway or Donegal to Kerry.

Saxifraga umbrosa, *Carum verticillatum*, *Euphorbia hyberna*, *Asplenium acutum* (the last also in North-east Ireland), *Helianthemum guttatum*, found on Inishbofin and Inish Turk (ranges from these islands to Three-Castle Head, Cork).

III.—Plants in Ireland peculiar to Cork and Kerry.

Arbutus Unedo (West Europe and Mediterranean), *Pinguicula grandiflora* (Alps and Pyrenees). The next four all occur in England:—*Carex punctata*, *Asplenium lanceolatum*, *Juncus tenuis* (Kerry only), *Simethis bicolor* (Kerry only), *Saxifraga Geum*, and *S. hirsuta*. *Pinguicula grandiflora* is another prominent member of our flora, which is nowhere so abundant as in Kerry and Cork; and my friend Mr Colgan has seen it growing, usually at an elevation of from 5000 to 6000 ft., in the Pyrenees, where, however, it does not attain so luxuriant a growth as in Kerry. *Arbutus Unedo*, so abundant at Killarney, occurs also, but more sparingly, in Co. Cork, about Glengarriff, &c.

IV.—Restricted to Clare, Galway, and Mayo.

Neotinea intacta (the locality on Lough Corrib just reaches Mayo). *Daboecia polifolia*, *Erica mediterranea*, *E. Mackaii*. All these heaths occur in the Spanish Peninsula, and *Neotinea* near Nice, &c.

With the West Irish we place *Euphorbia hyberna*, which, like *Saxifraga umbrosa*, reaches to the north of Donegal, and grows, with it, on the Pyrenees. In Ireland, finding its eastern limit along the River Suir, and in Colgan Glen, Co. Waterford. This rare spurge is known to the Kerry peasantry by the name of "Bonikean," not "Makinboy," as mentioned by some old writers, and it is still used for poisoning fish; its acrid milky juice, mingling freely with the water, stupefies all the unfortunate trout which come within the range of its influence. Its use, like that of quicklime by poachers, cannot be too strictly forbidden.

To these may be added the few of Watson's "Atlantic" species, peculiar to Cornwall or the West of England, which reach Ireland. Their number is fewer than might have been expected from the similarity of position and climate of these two districts. These species are—*Trichomanes radicans*, *Sibthorpia europæa*, *Carum verticillatum*, *Carex punctata*, *Rhynchospora fusca*, *Helianthemum guttatum*, *Asplenium lanceolatum*, *Hymenophyllum tunbridgense*, *H. Wilsoni*, *Bartsia viscosa*, *Viola Curtisii*, *Simethis bicolor*.

The most interesting species occurring on the borders of our district is the rare little orchid, *Neotinea intacta*, which was discovered by myself and my sister, Miss F. M. More, nearly thirty years ago, at Castle Taylor, in the county of Galway, and has since been ascertained to grow, in some plenty, throughout the Burren district of Northern Clare, on the same upper carboniferous limestone. It has also been found on the shores of Lough Corrib, near Cong, associated there, as in Burren, with *Potentilla fruticosa* and *Gentiana verna*. The last locality extends the range to Mayo.

It is very remarkable that at Castle Taylor, as in Burren, we find this Mediterranean orchid, a species as eminently southern as is the *Arbutus*, growing alongside of such alpine species as *Dryas octopetala*, *Gentiana verna*, *Hieracium iricum*, *Selaginella selaginoides*, *Sesleria cærulea*, and *Arctostaphylos Uva-ursi*. *Neotinea intacta*, and,

with it, *Rubia peregrina*, *Ophrys muscifera*, and *O. apifera* grow together, at little above sea-level, and associate with the corn crops of Watson's "agricultural zone." So that it becomes difficult to say whether we are dealing with alpines descending into the agricultural zone, or with plants of the lowest agricultural zone in a very abnormal association. At any rate, we have here a commixture of zones, nowhere else to be found in the British Isles, and which, we think, may be fairly attributed to the exceptional humidity of the Irish climate, as well as to past geological changes and migrations.

All the West Irish plants may be considered as species which are common to the West of France, the Pyrenees, and the Spanish Peninsula, and four of them occur also on the shores of the Mediterranean. This is sufficient to show the presence of a well-defined group of West European species on the western shores of Ireland. And in the same way, the general British and Irish Flora is almost altogether related to the European, in such a manner that we may suppose it has immigrated from the adjoining Continent, and is, in character, such as we might expect if the British Islands were not separated by the German Ocean, the Bristol Channel, and the Irish Sea. It would appear that Alphonse DeCandolle was right in accepting the theory that the immigration of our flora (and fauna) was effected through the former continuity of land, and that our islands were not colonised by water and air transport, across the narrow straits which now separate them from their former home. It is different with the spores of cryptogamic plants, which are easily carried by the wind, and whose unexpected presence in our islands may in this way be accounted for ; the dust-like seeds having been wafted, perchance, for many hundred miles across the Atlantic Ocean.

All three groups of European-Irish species must be assumed to have immigrated from the adjacent Continent after the glacial period had passed away, and when plants and animals were advancing northwards, under an ameliorated climate. This disposes of the question as to whether some of them may not have originated in Ireland. The presence of *Daboecia* in the Azores is harder to explain, but being, as Mr. Watson considers it, a distinct variety, it is likely to have reached these islands at a time when the species was young, and thus we have still remaining in the Azores a form more closely allied to the original race of the species.

The Alpine Flora of Cork and Kerry is comparatively poor, and nearly all the rare species occur in Kerry only—*Saxifraga hirta* and *S. affinis*, *Saussurea alpina*, *Aira alpina*, *Saxifraga aizoides*, *Draba incana*, *Subularia aquatica*, *Polystichum Lonchitis*—and *Thalictrum alpinum*, *Poa alpina*, *Polygonum viviparum*, *Alchemilla alpina* —the four last on Brandon only. A remarkably dwarf form of the adder's-tongue occurs on Brandon Head. It was found by Mr. H. C. Hart several years ago.

The following Lowland Species deserve particular mention :—

Simethis bicolor, one of the rarest British plants, occurs plentifully near Derrynane Abbey, and in other places along the Kenmare estuary.

Bartsia viscosa is frequent in Kerry and South Cork, especially near the sea-coast.

Lepidium latifolium (Dittander), perhaps a relic of ancient cultivation, grows in Cork, at Corkbeg, and near Youghal Harbour; and is recorded also from near the head of Kenmare River, and near Kinsale.

Subularia aquatica, and with it *Isoetes echinospora*, is found in Killarney Lakes.

Helianthemum guttatum is plentiful near the old ruins on Three-Castle Head, Cork.

Lathyrus maritimus grows, or grew, on the sandy shores of Castlemaine Harbour.

Galium boreale is plentiful on the shores and islands of Killarney Lakes.

Pyrola media is found near Ballyvaughan, and other places in Burren.

Wahlenbergia hederacea occurs along the Flesk, near Killarney, and near Lispole Station, towards Connor Hill; also along the Rivers Lee and Bandon.

Cicendia filiformis is found on the shores of Lough Guitane, and at Lough Currane; at Waterville and Glenmore Lake, in Kerry; at Berehaven, Glengarriff, Dursey Island, &c., in Cork.

Orobanche Hederæ. Muckross, on the Abbey walls, and on islands in the Lakes of Killarney, and at Derrynane, Kerry; frequent in Cork.

Lathræa Squamaria. Killarney.

Monotropa Hypopitys. In Muckross demesne, Killarney; also in Galway and Sligo.

Cuscuta Epithymum. On the sandhills near Ardfert (*R. W. Scully*).

Linaria repens is frequent about Bandon, with its hybrid progeny, *Linaria sepium* of Allman.

Sibthorpia europæa is plentiful on the northern slope of Connor Hill, at 1700 ft., and thence descends to sea-level at Fermoyle. It occurs also at Annascaul.

Calamintha Clinopodium. Killarney; very rare. Near Muckross.

Pinguicula grandiflora and *Euphorbia hyberna* are widely distributed in the west of Cork and Kerry.

Utricularia neglecta. Killarney and Tralee (*R. W. S.*).

Euphorbia amygdaloides finds its only Irish localities in the valley of the Bandon River—at Castle Bernard Park, and in Dunderrow Wood.

Epipactis ovalis grows in the Burren district of North Clare. A variety only.

Cephalanthera ensifolia grows near Killarney and Carah Lakes; also in a wood at Glengarriff, and at Adrigoole. Wood at head of Lough Carah. Wood by the Kenmare Road, near Derrycunnihy Cascade. Near Brickeen Bridge, and at Muckross, Killarney.

Allium Scorodoprasum. At Kenmare, and in the woods at Muckross; Foaty Island, and profusely in the woods near Bantry, where it was recently discovered by Mr. R. A. Phillips.

Simethis bicolor, as before stated, at Derrynane, and along the Kenmare estuary.

Juncus acutus. Plentiful on the warren at Rosscarbery.

Eriocaulon septangulare. In Lough Carah; in the Cloonee Lakes, south side of the Kenmare River; and in a mountain lake near Adrigoole.

Rhynchospora fusca is abundant in South Kerry, extending to Glengarriff, Ardgroom, and Berehaven, in Cork.

Scirpus parvulus. Along a stream near the sea at Ballybunion, Kerry (*R. W. S.*). It has become scarce at Arklow, the original Irish station.

Carex Bönninghauseniana. Near Killarney (*R. W. S.*). A rare hybrid.

C. aquatilis. Near south end of Carah Lake, in several places, and abundant along a small stream near the Upper Lake of Killarney (*R. W. S.*).

C. punctata is abundant along the shores of Kenmare River, and occurs also near Ventry, Berehaven, Ardgroom, Waterville, Kerry Head, &c.

Pilularia globulifera. By the Upper Lake of Killarney.

The Clare Plants, which, indeed, scarcely belong to our district, include, as already stated, one of our greatest Irish rarities, *Neotinea intacta*, and many sub-alpine species, of which the most noteworthy are *Ajuga pyramidalis*, *Helianthemum canum*, and *Potentilla fruticosa*, to which may be added *Astragalus Hypoglottis*, peculiar, in Ireland, to the South Isles of Arran.

Adiantum Capillus-Veneris occurs very sparingly, if not now extinct, along the south shore of the Shannon, near Foynes; and grows plentifully in the Isles of Arran; and in many localities in the north of Clare. There is a record of its having been found, many years ago, on Cahirconree Mountain, near Tralee, but no botanist has of late been able to rediscover it, and it is feared some mistake was made.

In concluding the above short summary of the characteristic plants of the South-west of Ireland, I gladly acknowledge the valuable and most friendly assistance which I have received from my friends Mr. Nathaniel Colgan and Mr. Reginald W. Scully; the latter is now engaged in the preparation of a Flora of Kerry.

FIRST RECORDS OF BRITISH FLOWERING PLANTS.

COMPILED BY

William A. Clarke, F.L.S.

(Continued from p. 279.)

Phyteuma orbiculare L. Sp. Pl. 170 (1753). **1633.** "Mr. Goodyer . . . . found it growing plentifully wilde in the inclosed chalkie hilly grounds by Maple-Durham neere Petersfield in Hampshire."—Ger. em. 455.

P. spicatum L. Sp. Pl. 171 (1753). **1640, 1829.** "Wilde in divers places of this land" (Park. Theatr. 648); rediscovered in 1825 by Rev. Ralph Price, "near Hadlow Down, in Mayfield, Sussex."—Borrer in E. B. S. 2598.

Campanula glomerata L. Sp. Pl. 166 (1753). **1570.** "Natales . . . montium pratorum . . . Angliæ Occiduæ sunt."—Lob. Adv. 139. "Upon the chalkie hils about Greenehyth in Kent," &c.—Ger. 365 (1597).

C. Trachelium L. Sp. Pl. 166 (1753). **1597.** "In the low woods and hedgerows of Kent about Canterburie," &c.—Ger. 365.

C. latifolia L. Sp. Pl. 165 (1753). **1633.** "In the yeere 1626 I found it in great plenty, growing wilde upon the bankes of the River Ouse in Yorkeshire, as I went from Yorke to visit Selby, the place whereas I was borne."—Johnson, Ger. em. 450.

C. rapunculoides L. Sp. Pl. 165 (1753). **1800.** "At Blair in Scotland. Fenwick Skrimshire, M.D."—Sm. Fl. Brit. i. 238. But there is a specimen in Herb. Buddle (c. 1708) labelled "Brought into Danby's garden at Hogsdon [Hoxton] out of some woods in Oxfordshire, among yew trees." See also Druce, Fl. Oxf. 188.

C. rotundifolia L. Sp. Pl. 163 (1753). **1597.** "Wilde in most places of England."—Ger. 368.

C. Rapunculus L. Sp. Pl. 164 (1753). **1597.** "Groweth in woods."—Ger. 369. "Prope Croydon in agro Surriensi."—Huds. i. 81 (1762).

C. patula L. Sp. Pl. 163 (1753). **1665.** "Rapuntium fl. purp. At Effaton, a mile from Wigmore, Herefordshire."—Merr. 103. "Merretus Rapuntium suum flore purpureo prope Effaton (lege Adforton) milliari a Wigmore Herefordiæ vico nasci tradit, quo in loco Campanulam hanc nostram provenire mihi retulit Littleton Brown, A.M., ut non videatur dubium, quin eandem nobiscum Merretus intelligat plantam."—Dillenius, Hort. Eltham. 69 (1732). See also Townsend, Fl. Hants. 205.

Specularia hybrida DC. Prod. vii. 490 (1839). **1633.** "Among the corn in Chelsey field."—Johnson, Ger. em. 440.

Oxycoccus palustris Pers. Syn. i. 419 (1805). **1597.** "Upon bogs and such like waterish and fennie places, especially in Cheshire and Staffordshire, where I have found it in great plentie."—Ger. 1367.

Vaccinium Vitis-Idæa L. Sp. Pl. 351 (1753). **1597.** "In Westmerland at a place called Crosby Ravenswaith."—Ger. 1230.

V. uliginosum L. Sp. Pl. 350 (1753). **1670.** "At Osten in Cumberland, . . . between Hexham and Pereth [Penrith], in the moorish pastures. Th. Willisel."—Ray, Cat. 309.

V. Myrtillus L. Sp. Pl. 349 (1753). **1570.** "In Anglia . . . fructum esitavimus."—Lob. Adv. 417. "In certayne woods of . . . Englande."—Lyte 670 (1578).

Arbutus Unedo L. Sp. Pl. 395 (1753). **1640.** "Hath beene of late dayes found in the West part of Ireland."—Park. Theatr. 1490.

Arctostaphylos alpina Spreng. Syst. Veg. ii. 287 (1825).

1777. "Upon many of the highland mountains . . . particularly on those to the south of Little Loch Broom, in Ross-shire," &c.—Lightf. Fl. Scot. i. 215.

A. Uva-ursi Spreng. Syst. Veg. ii. 287 (1825). **1666.** "Four miles from Heptenstall, near Widdop, on a great Stone by the River Gorlpe, in Lancashire."—Merrett, 123.

Andromeda Polifolia L. Sp. Pl. 393 (1753). **1597.** "In Lancashire . . . . especially neere unto a small village called Maudsley; there found by a learned Gentleman often remembered in our History (and that woorthily), Master Thomas Hesketh."—Ger. 1110.

Calluna Erica DC. Fl. Fr. iii. 680 (1805). **1551.** "The hyest hethe that ever I saw, groweth in Northumberland, which is so hyghe that a man may hyde hymself in."—Turn. i. P ij (210).

Erica ciliaris L. Sp. Pl. 354 (1753). **1829.** "Sent from a bog near Truro by the Rev. I. [J.] S. Tozer to Dr. Greville, 1828." —Lindl. Syn. 174. Previously known to Sir Charles Lemon: see E. B. Supp. 2618.

E. Tetralix L. Sp. Pl. 353 (1753). **1570.** "Saxosis montibus Angliæ occiduæ ad Bristoiam exilior fruticat."—Lob. Adv. 447.

E. Mackaii Hook. in Comp. Bot. Mag. i. 158 (1835). **1835.** Discovered by William MacCalla near Roundstone, Connemara.—Hooker. *l. c.*

E. cinerea L. Sp. Pl. 352 (1753). **1597.** "Hampstead Heath."—Ger. 1199.

E. vagans L. Mant. ii. 230 (1771). **1670.** "By the way-side going from Helston to the Lezard-point in Cornwal, plentifully."—Ray, Cat. 101.

E. mediterranea L. Mant. ii. 229 (1767). **1831.** Discovered by J. T. Mackay, in 1830, in Connemara [Urrisbeg Mountain].—Hook. Fl. Brit. ed. 2, 176.

Loiseleuria procumbens Desv. Journ. Bot. iii. 35 (1813). **1777.** Upon dry barren ground near the summits of the highland mountains, in many places, as in Ben-mor, &c.—Lightf. Fl. Scot. 140. But see Pennant, Voy. ii. 245 (1774).

Phyllodoce taxifolia Salisb. Parad. t. 36 (1806). **1812.** "Discovered at Aviemore, in Strathspey, and in the western isles of Shiant."—E. B. 2469. "First noticed near Aviemore by Mr. Brown, of Perth."—Sm. E. Fl. ii. 222.

Dabœcia polifolia D. Don in Edinb. N. Phil. Journ. xvii. 160 (1834). **1704.** "Erica St. Dabeoci Hibernis D. Lhwyd . . . . In montibus Mayo squalido & spongioso solo frequens est, ut & per totum Hiar-Connacht in Gallovidia."—Ray, Hist. iii., Dendr. 98. Found by Lhwyd in or before 1700. See his letter in Phil. Trans. xxvii. 524.

Pyrola rotundifolia L. Sp. Pl. 396 (1753). **1640.** "In Yorkeshire, Lancashire, and further North, yea even in Scotland, in the woods every where."—Park. Theatr. 510.

P. media Sw. in Vet. Ac. Handl. (1804), 257. **1807.** Discovered by N. J. Winch in Northumberland.—Winch's Bot. Guide to Northumberland and Durham, ii. 19. E. B. 1943.

P. minor L. Sp. Pl. 396 (1753). **1696.** "In Stoken-Church-Woods, on the right hand going towards London, as I am informed by Mr. Bobart."—Ray, Syn. ii. 243, where it is confused with *P. rotundifolia*.

P. secunda L. Sp. Pl. 396 (1753). **1690.** "Shewn me by Mr. Witham in Haselwood Woods, near Sir Walter Vavasors Park in Yorkshire."—Ray, Syn. i. 176.

Moneses grandiflora S. F. Gray, Nat. Arr. ii. 403 (1821). **1793.** Found in 1792 near Brodie House, Scotland, by James Brodie and Mr. James Hoy, near Gordon Castle, in Moray. "Both these gentlemen we believe are equally entitled to the honour of its first discovery."—E. B. 146.

Hypopitys Monotropa Crantz, Inst. ii. 467 (1766). *H. multiflora* Scop. (1772). **1677.** Stokenchurch, Oxon.—Plot. N. H. Oxon. 146 ("Orobanche Verbasculi odore").

Statice Limonium L. Sp. Pl. 274 (1753). **1597.** "Upon the walles of the fort against Gravesend . . . in the salt marshes by Lee in Essex," &c.—Ger. 333.

S. rariflora Drej. Fl. Excur. Haffn. 121 (1838). *S. bahusiensis* Fries. **1704.** "Waltonæ vico in Essexia non procul ab Harvico portu prope Molendinum copiosum invenit D. Dale nobisque communicavit."—Ray, Hist. iii. 247. Dale found it in this locality in 1700; a specimen from his herbarium is in Herb. Mus. Brit.

S. auriculæfolia Vahl, Symb. 25 (1820). *S. binervosa* G. E. Smith in E. B. S. 2663. **1597.** "Upon the chalkie cliffe going from the towne of Margate downe to the sea side."—Ger. 333. See G. E. Smith, *l. c.*

S. reticulata Sm. E. B. 328 (1795). **1746.** "Found on the coast of Norfolk by Mr. Henry Scott."—Blackst. Spec. 47.

Armeria maritima Willd. Enum. Hort. Berol. i. 333 (1809). **1570.** "Arearum margines ornant Belgæ et Angli, apud quos in maritimis frequens oritur."—Lob. Adv. 189.

Hottonia palustris L. Sp. Pl. 145 (1753). **1597.** "I have not founde such plentie of it in any one place as in the water ditches adioning to Saint George his fielde neere London."—Ger. 679.

Primula vulgaris Huds. i. 70 (1762). **1538.** "Arthritica . . . ab Anglis dicitur a prymerose."—Turn. Libellus. "Our primrose, which I never saw grow in any place, saving in England & East Freseland."—Turn. iii. 80 (1568).

P. veris L. Sp. Pl. 142 (1753). **1568.** "Coweslippe . . . . there are two kindes of them . . . one is called in the West contre of some a Cowislip & the other an Oxislip and they are both call in Cambridge shyre Pagles."—Turn. iii. 80.

P. elatior Jacq. Misc. i. 158 (1778). **1841.** Edinburgh Cat. of British Pl. ed. 2. Specimens sent by H. Doubleday to H. C. Watson from Bardfield, Essex, reported as such.—Phytol. i. 232 (June, 1842). Turner's Oxlip (see under *P. veris*) may have been this.

P. farinosa L. Sp. Pl. 143 (1753). **1597.** "In Harwood neere to Blackburne in Lancashire," &c.—Ger. 639.

P. scotica Hook. in Curtis Fl. Lond. t. 133 (1819) (ed. Hooker). **1819.** Found by Mr. Gibb, of Inverness, on Holborn Head, near Thurso in Caithness.—Hooker, *l. c.*

Lysimachia thyrsiflora L. Sp. Pl. 147 (1753). **1688.** "Nuperrimè peritissimus Botanicus D. Dodsworth, in Anglia, Comitatûs Eboracensis orientali parte hanc invenit."—Ray, Hist. ii. 1023.

L. vulgaris L. Sp. Pl. 146 (1753). **1548.** "It groweth by the Temes syde beside Shene."—Turn. Names, E. ij, back.

L. Nummularia L. Sp. Pl. 148 (1753). **1548.** "Herbe ij. pence or two penigrasse . . . groweth in moyste groundes," &c.—Turn. Names, H ij, back.

L. nemorum L. Sp. Pl. 148 (1753). **1570.** "In Angliæ nemoribus, locisque opacis . . . in quadam densa et amoena sylva Coventriæ proxima."—Lob. Adv. 194.

Trientalis europæa L. Sp. Pl. 344 (1753). **1620.** "In betuletis Scotiæ natans, D. Cargillus, ex Scotia misit."—C. Bauhin, Prod. Th. Bot. p. 100.

Glaux maritima L. Sp. Pl. 207 (1753). **1570.** "Angliæ plerisque mari cõterminis."—Lob. Adv. 178. "Between Whitstable and the yle of Thanet in Kent," &c.—Ger. 448 (1597).

(To be continued.)

SHORT NOTES.

Cyperus fuscus in Hants. — On August 25th, in company with the Revs. R. P. Murray and E. F. Linton, I discovered on a wet piece of ground near Ringwood, Hants, a fair quantity of *Cyperus fuscus*. Probably in ordinary seasons the ground where it grew is less approachable, which would account for its not having been previously detected.—W. R. Linton.

[It must not be forgotten that the New Forest is one of the places in which the mischievous practice of plant-introduction has been lately carried out. There is no particular reason why the *Cyperus* should not be native at Ringwood, but it is necessary to bear in mind the possibility indicated above. See *Journ. Bot.* 1892, 224, 247.—Ed. Journ. Bot.]

Elatine hexandra in Warwickshire. — An interesting result of the long-continued drought was the rediscovery of this minute water-plant on August 26th, at Coleshill Pool, Warwickshire, where I found it growing in some abundance on the dry, black bed of the pool, which is usually covered with a considerable quantity of water. This plant was first found at Coleshill Pool in 1835 by the late Dr. George Lloyd, who sent specimens to Mr. Watson, but it had not been seen there for many years.—H. Stuart Thompson.

Cambridgeshire Aliens.—*Erucastrum Pollichii* has appeared on Newmarket Heath; there are about a dozen plants. In every respect they are like specimens from Weedon in Prof. Babington's

herbarium. *Centaurea solstitialis* has appeared in a lucerne field at Grantchester. This is the second record since 1848. *Symphytum tauricum* and *Petasites fragrans* occur now in several places near Cambridge, and *Campanula rapunculoides* has sprung up in considerable quantity on the site of a Roman villa near Reach, unearthed during last winter.—J. Henry Burkill.

Eleocharis acicularis Sm. — A peculiar form of *Eleocharis acicularis* grows in considerable quantity in some of the lakes and canals in Ireland, and is apparently of by no means rare occurrence in that country. The form in question flourishes in from two to four feet of water, covering the bottom with a thick growth like short grass. The stems are of about normal length,—two to four inches,—not drawn out, as mentioned in Babington's *Manual* and Syme's *English Botany* as occurring when this species grows submerged; and they are apparently invariably destitute of inflorescence, all the specimens I examined being uniformly barren. The stems are translucent and very slender, collapsing into a pencil when the plant is taken from the water. I first noticed this plant in the canal near Caledon, in Co. Armagh, last summer; since then I have observed it in the Grand Canal in Queen's County and Kildare, and in Lough Neagh, near Toome; and have dredged it in abundance in about four feet of water in the centre of Lough Beg, between Antrim and Derry, at a spot where the lake is about half a mile wide. A curious fact is, that in no instance was the normal form observed growing on the damp margins of any of the waters where the submerged form occurred, or elsewhere in the vicinity. The species is of somewhat rare occurrence in Ireland, and I did not feel sure as to the identity of the lacustrine form till Mr. A. G. More verified my determination.—R. Lloyd Praeger.

Duration of Cochlearia groenlandica L. — I find that this species is not necessarily annual or biennial. Specimens in my garden, brought from E. Ross in 1891, have flowered two summers in succession, and are still thriving. The plant thoroughly maintains its distinctive characters.—Edward S. Marshall.

Limosella aquatica in Ireland.—Early in July last, Mr. O'Kelly, of Ballyvaughan, sent me some specimens of *Limosella aquatica*, which he had gathered on the margin of Lough Inchiquin, near Corofin, in the Co. Clare. This plant had not, it is believed, been previously found in Ireland, though it is mentioned by Wade in his *Plantæ Rariores* as "frequently occurring where water has stood during the winter—County Galway, near Ballynahinch, Connemara"; but this locality has not since been confirmed by any other botanist. About one month after the discovery of the plant by Mr. O'Kelly, being in the neighbourhood of Corofin, I visited the lake, which, owing to heavy rain, had in the interval risen about three feet, and submerged the *Limosella* to a depth of nearly two feet. I was able, however, with the help of a boat and my drag, to procure some plants, which then presented a totally different appearance to that of the specimens sent me by Mr. O'Kelly, having apparently, after submergence, cast off most of the old leaves with the ripened fruits, and developed a fresh crop of bright green

young leaves, the stems of which were in some instances elongated to as much as four or five inches. This stage of the plant's growth does not appear to have been previously noticed, and may be due to the abnormal season. Mr. O'Kelly has, since my visit, discovered the *Limosella* in two other localities in the neighbourhood of Gorst, in the Co. Galway, and no doubt the very dry season and consequent low state of the water in the lakes and "turloughs"* has brought to light this plant, which, in ordinary years, is probably nearly always under water, and has thus escaped the notice of botanists. The discovery now is a welcome and valuable addition to the Flora of Ireland.—H. C. Levinge.

Papaver Rhœas var. strigosum Bœnn.—In a note which appeared in this Journal last year (*Journ. Bot.* p. 309), I described some experiments which appeared to show that the above-named variety was really little more than a sporadic and unstable form. Further experiments this year have confirmed this conclusion. From a single plant of undoubted *strigosum* obtained last year, I have this summer raised 49 plants in three different lots grown under considerably varying conditions. The results were as follows:—The first lot (of 8) contained 3 of the var. and 5 typical *Rhœas;* the second (of 20) produced 6 of the var. and 14 typical; the third (of 21) produced 10 of the var. and 10 typical (one plant had the peduncles very sparingly setose, with bristles somewhat appressed, but not very decidedly so, and may be considered an intermediate form. Totals, 19 var. *strigosum;* 29 typical *Rhœas*.—H. N. Dixon.

NOTICES OF BOOKS.

Index Kewensis Plantarum Phanerogamarum Nomina et Synonyma omnium Generum et Specierum a Linnaeo usque ad annum MDCCCLXXXV *complectens nomine recepto auctore patria unicuique plantæ subjectis.* Sumptibus beati Caroli Roberti Darwin ductu et consilio Josephi D. Hooker confecit B. Daydon Jackson. Fasciculus I. [4to, pp. xvi, 728. A—Dendrobium]. Oxonii e prelo Clarendoniano [Sept.] MDCCCCXIII. £2 2s. net.

"Shortly before his death, Mr. Darwin informed me of his intention to devote a considerable sum in aid or furtherance of some work of utility to biological science; and to provide for its completion, should this not be accomplished during his lifetime. He further informed me that the difficulties he had experienced in accurately designating the many plants which he had studied, and ascertaining their native countries, had suggested to him the compilation of an Index to the names and authorities of all known Flowering Plants and their countries, as a work of supreme importance to students of systematic and geographical Botany, and to horticulturists, and as a fitting object of the fulfilment of his intentions.

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* Low-lying lands, in the limestone districts, usually flooded in winter.

"I have only to add that, at his request, I undertook to direct and supervise such a work; and that it is being carried out at the Herbarium of the Royal Gardens, Kew, with the aid of the staff of that establishment.—Jos. D. Hooker."

With this brief prefatory note is launched into the botanical world one of the most important works of reference which has ever appeared. What Dr. Murray's vast Dictionary, which is issuing at too long intervals from the same press, will do for the English language, Mr. B. D. Jackson has done for the systematic botanist: and his work will at once take its position as an indispensable factor in every botanical library.

The readers of this Journal have been kept *au courant* with the progress of the work, and Mr. Jackson has explained at some length* the lines on which it was to be carried out. It is therefore unnecessary to dwell upon the plan of the book. The aim is to record every genus and species of phanerogams published before the end of 1885—a date which, fortunately for the compiler, precedes the eruption of neo-American nomenclature, which is still raging, almost unchecked. The list is constructed upon Bentham and Hooker's *Genera Plantarum*, which has been taken as the authority for the limitation of genera.

The last edition of Pritzel's *Nomenclator* appeared in 1841, and a new issue of this, brought up to date by the inclusion of the plants described during the following quarter of a century, would in itself have been a boon to workers. But Mr. Jackson has done far more than this. He has added to each name, whether retained or synonymic, a full reference to its place of publication, and (though this, from the exigencies of space, is somewhat perfunctorily performed) an indication of its geographical distribution. We have thus in the smallest possible compass a record of the first publication of every name cited.

This statement makes manifest, without any further demonstration, the magnitude of the task which Mr. Jackson has undertaken. It is to be regretted that Sir Joseph Hooker, in the preface which has been quoted at length, has not made it more clear that the work is in the main Mr. Jackson's own, and that it has been carried out by him, doubtless "with the aid of the staff" of the Kew Herbarium, but, as was stated in the article in this Journal already referred to, chiefly by assistants employed for this special purpose. There can be no possible doubt as to the value of the help which Sir Joseph has given; but, as has been shown on more than one occasion in these pages and elsewhere, the Kew tradition as to nomenclature has always been lax, and Sir Joseph, although he has distinguished himself in every branch of botanical science, has never departed from that tradition. Doubtless, with the concluding part of the work, Mr. Jackson will give an account of its history, and will acknowledge the considerable help which he has received from the Botanical Department of the British Museum, and elsewhere.

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* *Journ. Bot.* 1887, 67, 150.

Before commenting on the *Index*, it is essential to recognise the great obligation under which Mr. Jackson has laid the systematic botanists of the world. It is hardly too much to say that there is no one to whom the work could have been more fittingly committed. For such a task, a thorough knowledge of bibliography is required, and Mr. Jackson has already proved his competence, not only by his *Guide to the Literature of Botany*, but by numerous other papers, many of them printed in this Journal, showing that careful regard for details and due appreciation of their importance which is essential to thorough work in this direction. It had come to be supposed that only Germans were sufficiently persevering to face the drudgery which such an undertaking involves—a drudgery of which no one who has not been engaged in dictionary or index work can form any idea: but Mr. Jackson has shown that where plodding industry is needed, England can hold her own. His modesty is not less praiseworthy. His care throughout has been to avoid the necessity of causing himself to be cited as the authority for any combination of names; and in this he contrasts favourably with too many modern writers, especially in America, whose often ill-considered resuscitation of disused names seems to have been actuated by a desire to "obtain a cheap notoriety by making new combinations." Changes of nomenclature on a large scale should be left to the monographers of genera, and Mr. Jackson has acted with judgment as well as with modesty in not attempting them. He would retain as the correct name of each species that under which it was first placed in its recognised genus. This of course will not satisfy those who attach a peculiar sanctity to the earliest specific name; but it is at least a definite course, and, as I have said more than once in these pages, is the one which appears to me the most satisfactory.

This brings me to the only serious omission—that of the date of publication after each specific name. Such an addition, made at the time of extracting, would not have added materially to the labour, nor would it have increased the bulk of the book; while it would have greatly added to its value. The plan adopted by Richter in his *Plantæ Europeæ* of assigning the date to each synonym at once settled the question of priority. Mr. Jackson, by omitting it, leaves the question unsettled—a serious matter to those who have not access to a large library, especially as Mr. Jackson's decision is not invariably to be accepted without question.

As an illustration of my meaning, I will take the synonyms of the plant for which Mr. Jackson retains the name *Cypripedium spectabile*. These he cites thus:—

"spectabile, *Salisb. in Trans. Linn. Soc.* i. (1791) 78.—Am. Bor.
album, Ait. Hort. Kew. ed. I. iii. 303 = spectabile.
canádense, Michx. Fl. Bor. Am. ii. 261. = spectabile.
hirsutum, Mill. Gard. Dict. ed. VIII. no. 3. = spectabile.
Reginæ, Walt. Fl. Carol. 222 = spectabile."

Now the simple addition of the dates to these names shows clearly that three of the four adduced as synonyms take precedence of the one retained: thus:—

album Ait. Hort. Kew. ed. I. iii. 303 (1789).
canadense Michx. Fl. Bor. Am. ii. 261 (1803).
hirsutum Mill. Gard. Dict. ed. VIII. no. 3 (1760).
Reginæ Walt. Fl. Carol. 222 (1788).

Salisbury, as everyone knows, had odd views on nomenclature, and thought it no blame to supersede a name by one which he considered more apt: and he cites *C. album* Ait. as a synonym of the plant which he preferred to style *spectabile*. Miller's name is the oldest, but that disappears from the synonymy of this species, being referred by Mr. Jackson in his "Addenda et emendanda" to *C. pubescens*. Against the next oldest name, *C. Reginæ* Walt., no objection can be urged: Lindley identified Walter's plant with *C. spectabile*, and the description in *Flora Caroliniana* is sufficiently satisfactory; any possible doubt, however, is set at rest by reference to Walter's Herbarium, now in the British Museum, where there is a good specimen labelled "*Cypripedium Reginæ*." This is the name which must stand. Mr. Jackson also allows Salisbury's *C. humile* (1793) to supersede *C. acaule* Ait. (1791), which he certainly would not have done had the respective dates been before him.

Yet another *Cypripedium* must change its name. Mr. Jackson cites—

"*flavescens* [DC. in] Red. Lil. i. t. 20 = pubescens.
pubescens *Willd. Hort. Berol.* i. 13—Am. Bor."

C. pubescens was first published by Willdenow, not in the *Hortus Berolinensis* (1816), but in *Sp. Pl.* iv. 143 (1805). Even so, however, *flavescens* antedates it, for the first volume of Redouté's *Liliacées* came out in 1802: both must yield to *hirsutum* Mill. (1760). In connection with *Cypripedium* I may note that Prof. Ascherson's "emendation,"—*Cypripedilum*,—published in 1864, finds no place in the *Index*.

Another advantage gained by adding the date would be the immediate determination, *cæteris paribus*, which of two retained species bearing the same name—a more frequent occurrence than might be supposed, and one which the *Index* will do much to avert in the future—is entitled to priority. When we find (under *Calceolaria*)—

"hypoleuca, *Benth. in DC. Prod.* x. 222.
hypoleuca, *Meyen, Reise*, i. 224."

the addition of the date to each would at once settle which plant had prior claim to the name.

I think I have said enough to justify my contention as to adding to each species the date at which it was published; and, having mainly confined my criticisms to *Cypripedium*, I will cite from that genus one or two other points for comment. It is to be regretted that there is no mode of indicating names which cannot be identified, such, for instance, as many of those published by Rafinesque and Vellozo. As it is, one finds side by side, in precisely similar type and mode of citation—

"Drurii, *Bedd. Ic. Pl. Ind. Or.* i. 23.—Ind. Or.
epidendricum *Vell. Fl. Flum.* ix. t. 64.—Bras.:"

the first a well-known plant, the second hitherto unidentified, but certainly not a *Cypripedium*. Two other species of Vellozo's—*cothurnum* and *socco*—are in the same position; a fourth, *vittatum*, has been identified. Mr. Jackson cites only the plates of these obscure plants, but it might have been well to refer to the descriptions, published in the complete text of the work issued at Rio in 1881. The appearance of such names without any warning as to their character is calculated to mislead the statistician who attempts to estimate the number of plants in a genus. In some cases a "quid?" or a "nomen" warns the reader that the names are doubtful, and such cautionary indications might well have been more frequently employed. The use of square brackets would have met the case.

Another class of entry which is likely to mislead is exemplified under *Cerbera* by—

"*fruticosa*, Ker-Gawl. in Bot. Reg. t. 391 = Kopsia fruticosa.
fruticosa, *Roxb. Hort. Beng.* 19; *Fl. Ind.* i. 691—Barma."

From this it would seem that Roxburgh's *fruticosa* is a different plant from that of Gawler, and is to be retained as a species; but Gawler described his plant from Roxburgh's MSS., and cites for it the *Hortus Bengalensis* as cited above. There should therefore be only one entry for this plant:—

"*fruticosa* Roxb. Hort. Beng. 19 = Kopsia fruticosa."

In the case of *nomina nuda*, some such indication is even more necessary, and there is a want of uniformity in the mode of their citation which is puzzling. At the end of Mr. C. B. Clarke's monograph of *Æschynanthus** are five names, "mihi nomine tantum notæ." Eliminating one which Mr. Jackson has succeeded in reducing, these stand thus:—

"Æ. atrosanguinea, Van Houtte Cat., 1851.
Æ. candida, E. G. Henderson Cat., 1851.
Æ. repens, Van Houtte Cat., 1851.
Æ. Roxburghii, Paxton Bot. Dict."

These four names seem to me of exactly similar value; yet Mr. Jackson prints the first in italics, the second and fourth in Roman (as if duly accepted and accredited by botanists), and omits the third altogether!

I do not understand on what principle hybrids are occasionally admitted. For example, Mr. Jackson includes—

"*Cypripedium Harrisianum* ×, Reichb. f. in Gard. Chron. (1869) 108": a cross between *C. barbatum* and *C. villosum*. But there are dozens of precisely similar hybrids which find no place: e. g., *C. Ainsworthii* ×, Reichb. f. in Gard. Chron. (1879) xi. 748. Why is one taken, while all the rest are left? In other genera these garden creations are more prominent, notably in *Bouvardia*, where we have among others—

"Oriana† × *Pars. ex Van Houtte, Fl. des Serres*, xii. (1857), 159, t. 1265."

---

* DC. *Mon. Phan.* V. i. t. 2.

† *Cypridium Harrisianum* × is printed in italics, *Bouvardia Oriana* × in roman; I cannot find any reason for this difference.

I am at a loss to understand why this finds a place in the *Index*, which is one of genera and species, not of hybrids and garden varieties; nor do I see why, if Oriana has claims to insertion, her sisters with equally charming names are excluded. M. Van Houtte says:—"Le *Bouvardia Oriana* et ses sœurs les *B. Laura*, *Hogarth*, et *Rosalinda* sont nés dans la belle petite ville de Brighton (Sussex), célèbre par ses bains et ses péchers," her birth being due to the exertions of "M. Parsons, horticulteur au dit Brighton,"* whose not too familiar name Mr. Jackson abbreviates into "Pars."

It is, I think, to be regretted that Mr. Jackson has not issued with this first part some short statement of the lines on which he has acted with regard to names,—"why some be abolished and some retained." The paper in this Journal already mentioned supplies much of this information; but the botanist who is not fortunate enough to possess it will often be somewhat puzzled, and even with its aid he will not be able to solve all the problems which present themselves. He knows, for example, that Asa Gray restored the genus *Acerates*, and made other changes in allied genera which have been generally accepted, yet Mr. Jackson tells us that *Acerates* = *Gomphocarpus*. So, on the faith of the *Genera Plantarum*, which Mr. Jackson follows, it does; but so equally does *Anantherix* Nutt., which Gray restores in the same paper.† Yet Mr. Jackson does not say of this, "= *Gomphocarpus*": no, he says, "= *Asclepiodora* A. Gray." But *Acerates* and *Anantherix* are restored by Gray on one and the same page; and are equally sunk under *Gomphocarpus* by Hooker and Bentham! The reason for this I do not perceive, for it does not appear that the following of the *Genera* explains it. But I suppose it is such following that explains why a generic name is in many cases adopted which is manifestly not the oldest, for Mr. Jackson sinks that as a synonym, and adds, "nomen prius." The well-known laxity of the *Genera* with regard to matters of nomenclature causes some regret that so excellent an opportunity of putting things right should have been let slip.

It is, however, certainly to be regretted that where the authority of the *Genera* does not stand in the way, Mr. Jackson should not have restored the correct name. He keeps up *Asclepiodora* A. Gray (1876), citing as synonyms *Anantherix* Nutt. (1818) and "*Anthanotis* Rafin. Fl. Ludov. 52, 149 (1817) nomen prius." It is true that Gray regarded his *Asclepiodora* as distinct from *Anantherix*, but Mr. Jackson unites them, and yet maintains a name published in 1876 for a genus which has two earlier specific names!

---

* I cannot resist the temptation to cite M. Van Houtte's amusing note on *Oriana*:—"Si l'on nous demandait l'étymologie de ce mot, nous le pourrions que supposer qu'il s'ágit ici de quelque prènom anglais (*Christian name*) dont nous n'avons pas plus la clef que de la signification d'autres noms familiers en usage chez eux, tels que *Bab*, *Beck*, *Bess*, *Cis*, *Dy*, *Dolly*, *Harriot*, *Ib*, *Kate*, etc. On eût bien pu nous éviter des récherches à cet égard; on aime à savoir ce qu'un nom répresente et nous devons ces renseignements à ceux d'entre nos abonnés qui y tiennent."

† *Proc. Amer. Acad.* xii. 66.

Again, Mr. Jackson appears to alter the termination of his names when it seems to him desirable, and, pending his explanation, I am inclined to demur to this. He gives the species of *Anantherix* a feminine termination, but their authors preferred the masculine; and, from a bibliographer's point of view, I think each name should appear exactly as published. Among the twelve species are illustrations of the almost impossibility of avoiding mistakes, for we have "*Nuttalianus* G. Don," instead of *Nuttallianus*, and "*pumilis* Nutt.," in place of *pumila*—or, as Mr. Jackson would have written it, *pumilus*. The right name for this plant, by the way, is *Podostigma pubescens*.

It is, of course, only by using the *Index* that its value can be estimated; but, having had somewhat exceptional opportunities for testing it, I am able to bear testimony to its completeness. I have found very few omissions, the most important is the Scrophulariaceous genus *Aragoa*; *Calobuxus* Panch. ex Brongn. & Gris. in Nouv. Arch. iv. 13 (1868) (=*Tristania calobuxus*) is another, and the much used form, *Amerinnum* (for *Amerimnon*), finds no place: few misprints —*Aerides shibatianum* is one (for *Shibatitiana*, itself a misprint for *Thibautianum*); *Bassia Mottleyana* (for *Motleyana*) is another; and *Cardamine Heyneana* should be *Hayneana*: and very few failing cross-references, such as "*Decaneurum frutescens* = *Centratherum frutescens*," a name not to be found under *Centratherum*. Sometimes, in the absence of explanation, I find citations which I do not understand, such as "Bursa-pastoris, [Tourn.] Rupp. Fl. Jen. 77 (1745)"—for, so far as I can read, Rupp's genus was *Bursa*; he certainly nowhere places a hyphen between that word and *pastoris*; and no more makes *Bursa pastoris* into a genus than *Plantago latifolia* on the next page. This comes perilously near making an author say what he has not said, a practice "to be abhorred of all faithful" botanists, and more than once denounced by Mr. Jackson. Nor am I convinced that "Benth. & Hook. f. Gen. Plant.," as an authority for species, is correct in most of the cases in which Mr. Jackson (following Kew use) employs it. Occasionally non-existent names are quoted, such as *Anguria Warmingii*. Mr. Jackson prints

> "Warmingiana Cogn. in Mém. Com. Acad. Belg. 8vo. xxvii. (1827) 21—Bras.
> Warmingia Cogn. l. c."

Even the most advanced neo-American nomenclaturist would shrink from naming two species thus similarly on the same page; and the latter, as I have said, does not exist in M. Cogniaux's paper.

Mr. Jackson observes the general botanical practice in spelling specific names derived from persons with a capital initial, whether employed as nouns or adjectives. This has been followed at Kew by the Hookers, Prof. Oliver, Mr. Baker, and most others. Mr. Hemsley, in the Botany of the *Biologia Centrali-Americana*, adopted the zoological practice of spelling all such names with a small initial; the Kew *Bulletin* takes a middle course, spelling nouns with a capital and adjectives with a small initial—*Carsoni* and *atkinsonianum*. Except when alterations of this kind ensure conformity with general practice, they are fidgetty and useless; the

charm of novelty, which seems to be the only reason for their adoption, hardly compensates for the setting aside of a recognised custom.

The abbreviated titles of books are, as might be expected from Mr. Jackson, sufficient for ready identification; "Wall. List" would have been more accurate than "Wall. Cat.," and "Ker-Gawl." for John Bellenden Ker (who was afterwards Gawler, but never combined the two names, hyphens not having then come into fashion) is inaccurate, though convenient.

I could linger longer over this delightful book, every column of which suggests interesting investigations. Mr. Newbould once said of Pfeiffer's *Nomenclator* that each entry afforded material for a paper; and this is far more true of the *Index Kewensis*. But the exigencies of space forbid a longer investigation of its merits, which, indeed, are sufficiently apparent.

The Clarendon Press have, it is needless to say, done their work admirably; but a word of remonstrance may be uttered with regard to their allowing the *Index* to be announced as "now ready," at least two months before its actual publication. One consequence of their misleading prospectus was that at least one London newspaper spoke of it as a *fait accompli*, and announced that part ii. was nearly ready; and an American journal for August referred to it as having "just been issued in London." It is to be hoped that the promise held out that the work will be completed in 1894 will be realised; it will assuredly not be Mr. Jackson's fault if his *magnum opus* has not by that time arrived at its conclusion.

JAMES BRITTEN.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (No. 37). — J. J. Kieffer, 'Beitrag zur Flora Lothringens.'—(No. 38). H. Heiden, 'Anatomische Charakteristik der Combretaceen' (1 plate).

Bot. Magazine (Tokio). — R. Yatabe, *Mallotopus japonicus* Fr. & Sav. (1 plate).

Bot. Notiser (Häft. 4).—H. W. Arnell, 'S. F. Gray's lefvermoss-släkten.' — R. Boldb, 'Några sötvattens-alger från Grönland.' — F. E. Ahlfvengren, *Malva borealis* × *vulgaris*, *Scleranthus annuus* × *perennis*.

Bot. Zeitung (Sept. 16). — B. Frank, 'Die Assimilation des freien Stickstoffs durch die Pflanzenwelt.'

Bull. Soc. Bot. France (xl.: Comptes rendus 3: Sept. 1).— H. J. de Cordemoy, 'Du rôle du péricycle dans la racine du *Dracæna marginata*.' — G. Gautier & E. Baichère, 'Le Pic d'Ourthizet et la Vallée du Rébenty.' — —. Hue, 'Lichens des environs de Paris.' — G. Rouy, '*Doronicum scorpioides*' (*D. Tournefortii*, sp. n.). — A. Battandier, '*Zollikoferia anomala*, sp. n.' — D. Clos, '*Herniaria hirsuta & glabra; Scutellaria galericulata & minor*.' — X.

Gillot, 'Le genre *Onothera*.' — E. Prillieux, 'Une Maladie de la Barbe de Capucin.' — L. Legué, 'Sur un hybride probable des *Stachys germanica* et *alpina*.' — P. Duchartre, 'Éloge d'Alphonse de Candolle.'—P. Brunand, 'Sphèropsidées nouvelles ou rares.'

Bull. Torrey Club (Aug.).—A. W. Evans, *Lepidozia sphagnicola* & *Jungermannia Novæ-Cæsareæ*, spp. nn. (2 plates).— W. D. Matthew, 'Scale-characters of North-eastern American Species of *Cuscuta*' (2 plates). — F. L. Scribner, 'Southern Botanists.' — A. Hollick, *Serenopsis Kempii* (1 plate). — E. L. Britton, 'The Jæger Moss Herbarium.'

Erythea (Sept.).—E. L. Greene, 'Distribution of some Western Plants.' — W. L. Jepson, 'Early Scientific Expeditions to California.'—I. M. Blockman, 'Californian Herb-lore.'—J. Burtt Davy, 'Teratological Notes.'

Gardeners' Chronicle (Sept. 23). — *Phalænopsis fugax* Kränzlin, sp. n.

Irish Naturalist (Sept.).—G. Pim & E. J. McWeeney, 'Fungi of the Dublin district.'

Midland Naturalist (Sept.).—J. E. Bagnall, 'Notes on the Flora of Warwickshire.' — W. B. Grove, 'The Fungi of Abbot's *Flora Bedfordiensis*.'

Natural Science (Sept.).—P. Groom, 'On Epiphytes.'

Oesterr. Bot. Zeitschrift. (Sept.). — L. Linsbauer, 'Ueber die Nebenblatter von *Euonymus*' (1 plate). — R. v. Wettstein, 'Die Arten der Gattung *Euphrasia*.' — H. Zukal, *Rhizophlyctis Tolypothrichis*, sp. n. — L. Celakovský, 'Ueber den Nabel der Fruchtschuppen-Apophyse von *Pinus*' (1 plate).

BOOK-NOTES, NEWS, &c.

Miss Ewart's paper on abnormal *Cypripedium* flowers, published lately by the Linnean Society, contains no reference to Mr. Spencer Moore's observations published in this Journal for 1879 (pp. 1–6), where a specimen corresponding in many particulars with one of Miss Ewart's is figured. A bibliography of the subject should, we think, always be attached to papers of this kind. There is in the Botanical Department of the British Museum a large collection of drawings of monstrosities of garden orchids executed by Mr. George Hansen, chiefly in the houses of Mr. F. Sander, the well-known orchid-grower. Mr. Hansen has since become Superintendent of the Foothill Station of the College of Agriculture of the University of California. Several monstrous Cypripediums are here figured and described.

Yet another Kew publication!—this time a series of volumes to be compiled from the *Kew Bulletin*. "The trouble of following [papers relating to one particular subject] through a series [numbering six] of annual volumes would defeat the [unspecified] object

in view: a volume now in course of preparation, to be followed from time to time by similar collections, deals with the subject of Vegetable Fibres." The exertion of looking through six volumes is too much for those who read the *Bulletin*, and the Government, out of consideration for these sybarites, is apparently about to produce a series of "collections" which will enable them to avoid this trouble. The art of bookmaking is not one which in these days stands in need of official encouragement. If the Kew authorities wish to produce a useful work, they may be reminded that another summer has been allowed to pass without the production of the long and often promised, and greatly needed, Guide to the Gardens.

The disconnection of the articles in the *Bulletin* is "in accordance with the principle laid down by the Government that information of public interest should be published as speedily as possible." But surely the Garden Guide is of far greater "public interest" than the very "miscellaneous information" purveyed by the *Bulletin!* Moreover, as a note in *Natural Science* for September points out, rapidity of publication is scarcely its most prominent feature. "The *Kew Bulletin* for July of this year supplies 'some recent information about this little-known group' [the Aldabra Islands], in great part consisting of a letter from the Administrator of the Seychelles, dated June 13, 1892, which merely repeats some of the facts noticed by us [*Natural Science*] a year ago."

Mr. G. F. Scott Elliot has started for Mombassa, whence he will proceed direct to Lake Victoria Nyanza, for the purpose of exploring Uganda. He is assisted by a grant from the Royal Society, and the results of his previous journeys warrant the supposition that he will bring back with him large collections of general as well as botanical interest.

The non-appearance of the September number of Hardwicke's *Science-Gossip* points to the cessation of the oldest established of our popular natural history journals. It was established by Robert Hardwicke in 1865, under the editorship of Mr. M. C. Cooke, who was succeeded in 1872 by Dr. J. E. Taylor, its editor up to the last. Although it has for some time hardly occupied the position which it held during the earlier years of its existence, it has been a source of information to many, and we trust that its cessation is but temporary.

Pastor Kneipp, the Bavarian parish priest whose name is familiar in connection with his "water-cure," has issued a *Plant-Atlas*, containing 69 pictorial representations of the medicinal plants he employs. The English version is brought out by Messrs. H. Grevel & Co., of King Street, Covent Garden. The figures, though small, are very good; they are taken from photographs, and carefully coloured. Although not sufficiently complete in detail to satisfy the botanist, the little book is likely to be useful to those for whom it is intended. A statement of the uses of each plant is given, with a short description, as well as a glossary of terms employed. Some of the English names have gone astray, as when "Dewberry" is applied to *Vaccinium Myrtillus*.

The Orchid Review seems to be making progress: the September number contains descriptions of three new species—*Masdevallia Burbidgeana*, *Lælia Lucasiana*, and *Maxillaria striata*—by Mr. R. A. Rolfe, who, we learn from the *Journal of the Horticultural Society*, is one of the editors of the magazine. No editor's name appears on the cover or title,—an omission which is becoming frequent,—and Mr. Rolfe's connection with the *Review* has been contradicted. We are glad to learn that it is under the management of one who, from his connection with the Royal Gardens at Kew, is in an admirable position for editing a journal of this kind.

By the death, in his ninety-fourth year, of the Rev. Leonard Blomefield (formerly Jenyns), which took place at Bath on the 1st of September, the Linnean Society (which he joined in 1822) has been deprived of its oldest member. From boyhood he was fond of the study of Natural History, and whilst at Eton a school-fellow lent him White's *Natural History of Selborne*. This book so impressed him that he copied the whole of it, with the exception of two or three chapters, with his own hand. The friend and fellow-student at Cambridge of the late Charles Darwin, Leonard Jenyns (by which name he is best known to many) was instrumental in obtaining for that eminent naturalist his appointment on board the 'Beagle.' For some thirty years Jenyns was incumbent of a Cambridgeshire parish (Swaffham, Bulbeck), where he manifested much energy and devotion to his clerical duties, whilst his favourite scientific studies were by no means neglected. In the year 1850 he came to Bath, and in the year 1871 took the name of Blomefield, on succeeding to certain family property. In 1855 he founded the Bath Natural History Antiquarian Field Club, of which he became the first President. His contributions to its meetings, like most of his published works, were mainly zoological, but in 1866 he read to the Club a long paper on the Bath Flora, which is printed in the *Proceedings* of the Club, vol. i. pp. 23–60, and shows considerable acquaintance with British plants. He subsequently presented to the Bath Royal Literary and Scientific Institution his herbarium, as well as a valuable collection of upwards of two thousand volumes, known as the Jenyns Library. The last few years of Mr. Blomefie'd's life were passed in comparative seclusion. His mental vigour was remarkable, even in his extreme old age, and up to within a very short period of his death he would carry on an animated conversation with his friends on any of his favourite subjects. He was an old life member of the British Association, and a F.G.S. In the "Chapters in my Life," published for private circulation in 1889, Mr. Blomefield observes that in his early days he resolved to have nothing to do with four things, *viz.*, sporting, farming, politics, and magisterial business; and he kept his resolution to the end. A somewhat extraordinary confession for a naturalist, contained in the same book, is that he never fired off a gun in his life. He was a generous supporter of scientific research, and did his utmost to encourage the study of natural history and science. For much of this information we are indebted to a notice by Mr. W. G. Wheatcroft, published in *Nature Notes* for the current month.

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NOTES ON PAPUAN PLANTS.

By Baron Ferd. von Mueller, K.C.M.G., M. & Ph.D., F.R.S.

(Continued from Journ. Bot. 1892, p. 17.)

Elæocarpus Ganitrus Roxb. — South-eastern New Guinea; *H. O. Forbes* (676). These specimens are unaccompanied by fruits, but otherwise accord with the plant from insular and continental India. The leaves turn beautifully reddish in age. The stamens may become reduced to 25, or be increased to 60, or even more. Sir William Macgregor has sent separate fruits from Milne Bay, apparently referable to this species. *E. persicifolius* (Brongn. & Gris. in *Ann. Sc. Nat.* 1864, p. 356), from New Caledonia, may also prove conspecific. The East Australian *E. grandis* is another closely allied plant. Specimens of the genuine *E. Ganitrus* have also been received from the New Hebrides, where, however, the Rev. D. Macdonald detected another *Elæocarpus* of the *Ganitrus* series, which has probably the largest leaves of any species in this genus, unless *E. undulatus* and *E. Milnei*. They measure to fully 1 ft. in length, and to 5 in. in breadth, with petioles about 1½ in long; they are therefore larger than those of *E. Parkinsonii* (Warburg in *Engl. Bot. Jahrb.* xiii. 377), from which this species already differs in leaves rounded at the base, broadest rather below the middle, slightly undular at the margin, although not distinctly serrulated, and without any lustre, but contrarily of equal dull green on both sides, and the secondary venulation more prominent, further in only slightly laciniated petals; but it agrees with the plant from Ralun, in contrast to *E. Ganitrus*, as regards the vestiture of the sepals, the much elongated setule of the anthers, and the length of the filaments. Fruits have not been obtained. This singularly conspicuous plant received the name *Elæocarpus Macdonaldi*. The autochthones call it "Ai-Kolop." It cannot be identical with the imperfectly known *E. Milnei*, to which Seemann attributes leaves gradually narrowed at the base, and flowers with only about twenty stamens. This new plant impairs still more the strength of the genus *Antholoma*, because (so far as can be judged from the material before me) the petals, which are of rather thickish texture, seem to cohere almost permanently, upwards particularly, forming the nearly conical corolla of that genus. *Antholoma Billardierii* (Vieillard, *Pl. de la Nouv. Caled.* 5, anno 1865) is also a large-leaved species.

Elæocarpus edulis Teijsm. & Binn. *Nat. Tijdschr. Ind.* xxvii. 25. — Leaves nearly opposite, on very short petioles, of rather thin texture, mostly lanceolar-ovate, somewhat acuminate, mucronular-denticulated, above scantily, beneath more copiously, beset with hairlets; flowers axillary, few or occasionally only two together; sepals five, narrow-lanceolar, outside brown-velvety, hardly or tardily spreading; petals usually slightly longer, elongate-cuneate, at the upper end irregularly lobulated, outside except the margin glabrous, inside except the upper part silky-velvety; stamens 20–30,

their filaments capillary, flexuous, glabrous, their anthers linear-cylindric, subtle-puberulous, at the summit barbellate and there minutely bivalved; style, except the terminal portion, as well as the ovulary, villous-tomentose; fruit ovate-conical, tomentellous.

Sogere, 1500–5000 ft.; *H. O. Forbes* (295, 705, 896).

Branchlets much beset with short brown hairlets. Leaves to 6 in. long and 2½ in. broad, prominently costulated, the venules very conspicuous beneath; inflorescence when well developed cymous-corymbose. Peduncles from very short to 1½ in. long. Flower-bearing pedicels variously shorter than the calyx, but never very short, and lengthening to nearly 1 in. when fruit-bearing. Sepals ½–⅔ in. long. Petals when dry dark-coloured, in bud to beyond the middle flat and slightly distant, upward membranous. Anthers considerably shorter than the filaments. Torus very short. Style subulate, finally lengthening to ¾ inch. Fruit seen only in a semi-mature and somewhat deformed state, then less than 1 in. long, inside ligneous-hard, only one cell, so far as seen, forming a seed.

An authentic specimen of *E. edulis* from the original place of discovery has a lesser indument, and smaller, more tender leaves; but in all essential characteristics of structure Mr. Teijsman's plant agrees with that of Mr. Forbes, unless the ripe fruits, seen here of neither, should prove different, which is, however, improbable. The disposition of the leaves and flowers offer an approach to the genus *Sloanea*. In its external appearance the plant reminds of that of some Pittosporums. The exceptional characteristics of *E. edulis* render it now difficult to separate generically from it *Aristotelia Braithwaitii*, so that this might now also be regarded an *Elæocarpus*.

The total of the species of *Elæocarpus* now known from New Guinea is ten, namely, *E. edulis*, *E. Reedyi*, *E. Sayeri*, *E. latescens*, *E. undulatus*, *E. Ganitrus*, and four others, of which, however, we have hitherto only flowering specimens. This number will likely yet much be augmented by future researches, as Brigade-Surgeon Dr. G. King, merely from the Malayan Peninsula, has recently recorded twenty-three well-marked congeners. From Continental Australia we know up to date eleven, the eleventh (*E. Johnsonii*) having been discovered recently in Northern Queensland. It has a vestiture almost like that of *Dubouzetia campanulata*, rather large, well-staked and nicely costulated leaves of nearly ovate form, and not very firm texture, and conic-obovate fruits, dark outside, over an inch in length, on long pedicels, and ripening two seeds.

Antholoma Tieghemi F. v. M. in *Vict. Naturalist*, viii. 164 (1892). — Branchlets tomentellous; leaves on very short petioles, almost ovate or somewhat lanceolar, often narrowly acuminated, distantly denticulated, glabrous above, sparingly beset with very short hairlets beneath, and there prominently costulated as well as reticularly venulated, shining on both sides; flowers comparatively large, often solitary, short-stalked; sepals 4, nearly lanceolar, inside and outside subtle-velvety; corolla somewhat longer, fimbriate-slit at the summit, outside somewhat silky, and inside slightly silky towards the base; stamens 60–70, beset throughout

with very minute hairlets; anthers much longer than the filaments, their setule not much shorter than the cells; fruit almost ovate-ellipsoid, three-valved, outside slightly rough.

On Mount Yule, near its summit. Leaves 2–3 in. long, somewhat elastic. Sepals measuring about $\frac{1}{2}$ in. in length, finally separating. Fringes of the corolla broadish. Stamens hardly $\frac{1}{4}$ in. long. Style long, persistent, puberulous at its lower portion, finally lengthening to nearly $\frac{2}{3}$ in. Fruit 1–1$\frac{1}{2}$ in. long, much pointed, its dehiscence tardy, but complete. Seeds about $\frac{1}{3}$ in. long, their testule brownish black.

This description is from very fragmentary material. The form of the leaves and their denticulation, the longer setule of the anthers, and the three-celled ovulary, already separate this Papuan species from *A. montanum*.

This remarkable plant, which demonstrates now the occurrence of the genus *Antholoma* outside of New Caledonia, is dedicated to Professor Ph. Van Tieghem, the celebrated representative of vegetable anatomy and morphology in the Paris University.

Sloanea Forbesii. — Branchlets tomentellous; leaves conspicuously petiolate, almost ovate or verging into a roundish form, slightly undular at the margin, particularly blunt at the base, soon almost glabrous on the surface, puberulous beneath; flowers few or several, or occasionally only two together; involucellar bracts very narrow, 3 or less, or absent; sepals 4 or 5, lanceolar on both sides as well as the peduncles, and pedicels velvety; petals somewhat longer than the sepals, crenate-incised at the summit, subtle-velutinous, particularly outside; stamens 25–30, beset with minute hairlets throughout; anther-cells scarcely longer than the filaments, the terminal setule hardly shorter; style rather long, downward, as well as the ovulary velutinellous.

Sogere, at 1500–5000 ft. elevation; *H. O. Forbes* (273).

Leaves to 6 in. long and to 4 in. broad, brittle. Pedicels to nearly 1 in. long, or variously shorter. Length of sepals hardly $\frac{1}{2}$ in. Petals sometimes partially connate. Stamens to $\frac{1}{4}$ in. long. Fruit unknown, so that as yet it remains uncertain whether this species should be placed systematically nearer to *S. sterculiacea* or to *S. tomentosa*. Mr. Forbes's collection contains two more Sloaneas, which seem closely related to that just described; one of these (542) has the petals more velvety and almost entire, while the filaments and anther-setule are much shorter; the other (565) has the sepals narrower, but is devoid of good flowers; as of both the fruits are wanting, it seems best to leave them for the present specifically undefined. The indesirability of retaining the genus *Echinocarpus* has been shown also by Hance when describing *E. sinensis* in *Journ. Bot.* 1884, 108.

On specimens of *Sloanea Schumanni*, or of some allied species, occur stipules renate-cordate in form, 1–$\frac{1}{2}$ in. broad, bent downward, early deciduous, and perhaps not always developed. Similar organs appear also on the base of some of the peduncles; they bear comparison to amply developed stipules of *Elæocarpus stipularis*. The inflorescence is that of a typical *Elæocarpus*. *Græffea calyculata*

exhibits also large stipules and paired bracts, but they are connate. The requirement of abolishing *Phœnicospermum* by reduction to *Sloanea* was surmised already (1872) by Baillon (*Hist. des Plantes*, p. 200), a suggestion acted on by Szyszylowics in his monograph of *Tiliaceæ;* but Durand still upholds that genus. The quaternary or quinary division of the calyx and corolla in the genus *Sloanea* is not a constant mark of distinction, as shown also for *S. australis* by the late Rev. Dr. Woolls.

Colona serratifolia Cav. *Icon.* iv. 47, t. 370.—Fly River; *Sir W. MacGregor*, accompanied by *Combretopsis pentaptera* and a *Schuurmansia*, to 60 ft. high. The Papuan plant agrees so well with the definition and delineation given already (1797) by Cavanilles, that his species and ours seem unseverable. The petals, however, are broader in proportion to their length, and the fruit enlarges variously into 3–5 primary expansions. In referring the New Guinea congener to the typical species, it should be remembered that several rather unfrequent woody plants range likewise from the Philippine Islands as far or still further south than New Guinea; for instance, *Fitzgeraldia mitrostigma*, *Lunasia amara*, *Deeringia celosioides*, *Muehlenbeckia platyclada*, *Ganophyllum falcatum*, *Garuga floribunda*, *Psoralea badocana* (Blanco), *Alphitonia excelsa*, *Lagerstræmia reginæ*, *Iodes ovalis*, *Exocarpos latifolia*, *Tectona grandis*. The original name is readily restorable for the genus also, though in either case of keeping to it or to that of *Columbia* the dedication is quite out of place, when phytologically the memory of the great discoverer of Central America is to be honoured.

Quinetia Macgregorii. — Almost glabrous; leaves on very conspicuous petioles, mostly cuneate-elliptical, entire, somewhat recurved at the margin, subtle-costulated, beneath fuscescent and minutely dotted, the venules immersed; racemes simple; pedicels nearly as long as the calyx or somewat shorter; lobes of the calyx almost deltoid, extremely short, tube nearly hemiellipsoid, only slightly streaked; fruit usually five-celled, its valves almost equal in length to the calyx-tube; seeds narrow lanceolar, pale brownish.

On Mount Suckling, at 5–6000 ft. height; *Sir W. MacGregor*.

Nearest to *Q. Fawkneri*, but the leaves are larger and much longer stalked, the calyces are less angular, the style much shorter, and the fruit-valves are more emersed. When the ripe fruits of *Q. Fawkneri* and the flowers of the Papuan species will be known, further distinctions may become obvious.

This is the sixth species of the genus now on record, and it is the most northern; furthermore, it demonstrates how considerable is the various pervasion of the Australian element in the Papuan Flora.

Geranium pilosum (Sol.) Forst. *Prodr.* 91.—Summit of the Owen Stanley's Ranges; *Sir W. MacGregor*.

Fragments of this plant, clearly recognisable as belonging to this species, were obtained from intricately branched tufts of other highland plants of New Guinea, together with *Coprosma repens* or some nearly cognate species, and with a new *Hydrocotyle* (*H. azorellacea*), much resembling a *Huanaca* in habit.

Biophytum albiflorum. — Generally unbranched; leaflets forming 4 to 12 pairs, the two supreme elliptic cuneate, the others trapezoid-elliptical, all minutely apiculate and almost glabrous, their upper half at the base truncate, and anteriorly much protracted; peduncles almost capillary, as well as the raches of the leaves beset with very short hairlets; flowers quite small, usually on long pedicels; petals white or slightly reddish, hardly longer than the sepals; fruit about as long as the calyx, nearly globular; seeds brown, shining, slightly rugular.

Along Margaret Creek from Bourawarri up to 7000 ft. on Mount Obree, chiefly on stones; *W. Sayer*.

Stem to 6 in. long, bare, but puberulous, exceptionally divided into 2 or 3 branches. Lateral leaflets to $\frac{1}{2}$ in. long, and to $\frac{1}{4}$ in. broad. Flowers in the umbels few, or two, or reduced to one. Pedicels sometimes nearly 1 in. long. Sepals only about $\frac{1}{8}$ in. long, streaked by several venules. Fruit pale brownish, almost glabrous. This species is more delicate in all its parts than the ordinary state of *B. sensitivum*, from which and its allies, moreover, the smallness of the flowers, the white petals, and the shape of the fruit distinguish it. Its place will be next to *B. Reinwardtii*, from which, according to Hasskarl's elaborate description of that congener, the Papuan plant can be kept apart already by leaflets more inequilateral, and more equally green on both sides; further by longer pedicels, colour of petals, and fruits nearly as broad as long.

(To be continued.)

SOME BRITISH POTENTILLA-HYBRIDS.

By the Rev. E. S. Marshall, M.A., F.L.S.

Some time ago Mr. W. H. Beeby (*Journ. Bot.* 1888, pp. 78, 79) gave the results of Herr Svanté Murbeck's examination of various British Cinquefoils. He has since been good enough to forward for me a considerable series from the Rev. W. H. Purchas's herbarium, together with a few specimens of my own about which there was some doubt. The determinations indicate that these hybrids occur not unfrequently in the South and Midlands; and one which had not been detected at the time when the above-named paper was published has been added to our list.

Herr Murbeck replaces the name *P. Tormentilla* Neck. by that of *P. erecta* (L.) de la Torre. Dr. Focke, however, in the new German Flora now publishing (p. 820), says that "the plant known from old time as *Tormentilla* must retain this name specifically, after the absorption of the genus," and probably most people will agree with him. Indeed, the constant shuffling of names has become an intolerable nuisance.

P. procumbens × *reptans* (*P. mixta* Nolte). Staffordshire:—Roadside bank on Ham Moor, near Alstonefield, *Purchas*; Dovedale, *Ley*, *W. R. Linton & Purchas*. Herefordshire:—Between Broadmoor

Common and Sharpnage Well, *Ley & Purchas*; near Penteloe Brook, Woolhope, *Ley & Purchas*. Pembrokeshire:—St. Issel's, near Tenby, *Purchas*. W. Kent:—Hedgebank between Cranbrook and Bedgebury, *Marshall*. E. Kent:—Dry clayey bank in a meadow outside Chiddenden Woods, towards Tenterden, *Marshall*. Surrey:—Clayey bank, between Witley and Grayswood, *Marshall* (this is the plant mentioned in *B. E. C. Report* for 1892).

P. procumbens × *Tormentilla* (*P. suberecta* Zimmeter). Staffordshire:—On a walled bank at the Railway Station, Rocester; between the Railway Station and the Hotel, Rudyard; between Reap's Moor and Longuor; between Alstonefield and Longuor; all *Purchas*. Derbyshire:—Bradley, *W. R. Linton*. Herefordshire:—Near Garway Hill, 1850, *Purchas & Lingwood*. Brecknockshire:—Llanwrtyd, *Purchas*. S. Devon:—Hedgebank by Cann Plantation, between Colebrook and Shaugh, *Archer Briggs* (this closely approaches *P. procumbens*, for which it was gathered). *Ireland*, Co. Down:—Dry hedgebanks, Newtonbutler, 1849, *Dr. Mathew*.

P. reptans × *Tormentilla* (*P. italica* Lehm. 1849, *P. Gremlii* Zimm. 1884, *P. adscendens* Gremli). Surrey:—Roadside near Grayswood, Witley, 1887, *Marshall*. E. Kent:—Clayey ride in Chiddenden Woods, *Marshall*. The specimens are somewhat young, in this case, and *procumbens* × *reptans* is a possible alternative; but they seem to be better named as above. The hybrid has not previously been determined as British on good authority, so far as I am aware; but it can hardly be very scarce, having regard to the apparent frequency and wide distribution of *procumbens* × *reptans*.

It may be useful to translate Dr. Focke's descriptions and remarks (*l. c.* pp. 820–1); premising, however, that (as he indeed hints) considerable latitude must be allowed in dealing with such variable forms as hybrids commonly assume. Specimen-matching alone will not help us much:—

"1. *P. procumbens* × *Tormentilla*. . . . Stem hardly rooting, *loosely panicled* above; lower stem-leaves shortly stalked, upper not stalked; *stipules* more or less deeply *incised;* flowers almost as large as in *P. procumbens;* pollen with many imperfect grains; fruit mostly abortive. Connecting the two species by many intermediate forms. As *P. procumbens* is usually associated with *P. Tormentilla*, the hybrid forms may be almost universally found where *P. procumbens* grows, often far more frequent than it.

"2. *P. reptans* × *Tormentilla*. . . . Often very like *P. procumbens;* stem long, creeping, and often rooting; leaves stalked, 3–5-nate; leaflets more glabrous and often larger than in *P. procumbens;* stipules *ovate-lanceolate*, entire, or with solitary, deep, lateral incisions; flowers showy; pollen containing but few well-developed grains; it fruits very little. A *per-tormentilla* form is like a strong *P. Tormentilla*, but is easily distinguished by the larger flowers and the stalked lower leaves; stipules occasionally undivided, generally rather strongly incised; pollen with many normal grains; fruit not rare. This form is very like *procumbens* × *Tormentilla*. *P. Tormentilla* and *P. reptans* as a rule grow in different situations;

but where they occur in company, particularly in light wooded spots on loamy soil, the hybrid forms are also apt to be plentiful.

"3. *P. procumbens* × *reptans*. . . . Basal leaves quinate; stem creeping, rooting; *flowers solitary*, showy, to some extent 4-partite, but *principally 5-partite;* stem-leaves stalked, stipules *undivided*."

NOTES ON THE FLORA OF BERKSHIRE.

By G. Claridge Druce, M.A., F.L.S.

During my residence in Oxford, dating from 1879, I have been working at the Flora of the above county—until 1885, however, only in a secondary degree to that of Oxfordshire. On the completion of my Oxfordshire Flora, and hearing from Mr. Britten that he did not contemplate the continuance of the work inaugurated in his useful "Contributions towards a Flora of Berkshire," which was printed in the *Transactions of the Newbury Field Club* for 1871, I decided to undertake the task of completing a Flora of Berkshire. Unfortunately I have had but few coadjutors, and as some parts of the county are rather difficult of access to one living in the extreme corner, the distribution of all the plants is by no means exhaustively investigated; yet the salient features, at any rate, of its Flora have been made out during my explorations of the last eight years.

I have also examined all the records which are scattered through the works of Turner, Lobel, Gerard, Parkinson, How, Merrett, Morison, Ray, Dillenius, and the more recent authors. The herbaria of Dubois, Bobart, Sherard, Dillenius at Oxford; that of Sir Joseph Banks, as well as the British herbarium of the British Museum, and that of Sir James E. Smith in the possession of the Linnean Society, have also been examined. Many valuable MSS. of Goodyer, Lightfoot, Wm. Browne, Dillenius, Sheffield, Baxter, and others have been placed under requisition, so that the forthcoming Flora will contain as far as possible all that is now known of the plants of the district.

Perhaps it may be well to state that while many of the old authors are cited in Britten's "Contributions," a rather important list is omitted, *i. e.*, that given in Dr. Mavor's *General View of the Agriculture of Berks*, published in 1809, which really forms the basis of the County Flora, consisting as it does of about 500 species, many of which are localised; it contains, however, many errors.

The various species given in Britten's "Contributions" have now, with comparatively few exceptions, been verified by me. The following, up till the present time, I have not been able to find. These may be divided into four categories:—

1st. Plants of casual occurrence, or which were not indigenous, but were probably correctly recorded:—*Anemone apennina* L. In a copse at Shillingford, *Baxter*. — *Pæonia officinalis* L. This, which, according to How, in the *Phytologia Britannica*, occurred in a close at Sunningwell, has long ago disappeared. — *Isatis tinctoria*

L. Near Wantage, *Dr. Trimen.* — *Silene nutans* L. One plant in Wellington Grounds, *Rev. C. W. Penny.*—*Silene Armeria* L. Near Sonning. — *S. conica* L. One plant near Newbury, *H. Boswell.*— *Linum angustifolium* L. Farm at Crowthorn, *Rev. C. W. Penny.* This may belong to a higher grade of citizenship. — *Geranium phæum* L. A garden straggler. — *Mespilus germanica* L., given in the Newbury list as occurring in orchards and hedgerows, is a denizen in Oxon.—*Smyrnium Olusatrum* L. About Windsor Castle, *Blackstone.* — *Anthriscus Cerefolium* L. Hedge near Windsor.— *Lonicera Caprifolium* L. Bagley Wood, *Rev. A. Bloxam.* This may belong to the denizens. — *Filago gallica* L. Has occurred in Berkshire. It may be a colonist; I have been unable to find any other record than the above vague note.—*Polemonium cæruleum* L. Two localities are on record; both of garden origin? — *Veronica spicata* L. Three or four plants in a brickfield at Wellington College, *Rev. C. W. Penny.* — *Chenopodium Botrys* L. Bray, 1861. —*Narcissus biflorus* Curtis. Grange Farm.

2nd. The following perhaps have more claims to be included as Berkshire plants :—*Adonis autumnalis* L. Three localities are given in the Newbury list. — *Lythrum Hyssopifolia* L. Only recorded from Cholsey by Henslow, who was vicar there, and from near Windsor. — *Tordylium maximum* L. The record in the *Botanist's Guide* for Eaton Wick intends not the place of that name near Oxford, but the Eaton Wick near Eton, Bucks, and may be really in that county. I have seen a specimen from the neighbourhood of Tubney, gathered some twenty years since.—*Inula Helenium* L. has apparently disappeared from the locality given in Walker's *Flora.* — *Campanula Rapunculus* L. also has disappeared from Newbury, &c.

3rd. The plants which have become very rare, or possibly extinct :—*Dianthus prolifer* L. From near Windsor.—*Caucalis daucoides* L. About Reading. Is now a very rare plant in Central Britain. — *Gnaphalium dioicum* L. The records in the Newbury list are possibly erroneous, but it may yet be found on the north escarpment of the chalk. — *Gentiana Pneumonanthe* L. I am afraid lost from Sulehampstead. It occurs in Surrey and Hants, just outside the county, and has been recorded from Wild Moor Bottom, near Wokingham, a place not known in the locality. Should it have been Lungmoor or Broadmoor? — *Scrophularia vernalis* L. About Bucklebury. There is no very recent record. — *Orobanche Rapum* Thuill. A decreasing plant in all its Midland stations.—*Teucrium Scordium* L. I have been unable to find it in the marshy meadows of Abingdon and Eynsham, which formerly yielded it. They are still damp enough. The Godstow locality was in Oxon. — *Orchis Simia* Lam. Almost or quite extinct. — *Damasonium Alisma* Mill. I have carefully searched the Bracknell and Southcote localities without success. — *Lastrea Thelypteris* L. Formerly in Windsor Park and Sunningwell Bog. Is there a more recent record?— *Lycopodium clavatum* L. Although not recently found, surely it will yet be discovered about Bagshot Heath.

4th. Plants recorded in error, or of which there is only a slight

probability of being correct. Mr. Lousley contributed many records to the Newbury list, but they are so full of gross inaccuracies as to throw doubt on all his statements. His records of *Lathyrus palustris* L., *Illecebrum verticillatum* L., *Polycarpon tetraphyllum* L., *Salvia pratensis* L., *Euphorbia platyphylla* L., *Habenaria albida* Br., and *Allium Scorodoprasum* L. are all erroneous. The list of plants found about Pangbourne by Mr. Pamplin also contains several misnomers:—*Viola Curtisii* Forst. is a form of *V. tricolor* L.—*Trifolium subterraneum* L. requires verification.—*Sedum Forsterianum* Sm. is probably a mistake for *S. reflexum* L.; his *Myosotis sylvatica* is *M. arvensis* var. *umbrosa;* his *Cardamine impatiens* L. is *C. sylvatica.*—*Cephalanthera ensifolia* is not correct; his *Aceras anthropophora* is probably *Habenaria viridis;* the *Lamium incisum* is a variety of *L. purpureum;* and there are doubts as to the correctness of *Carduus tenuiflorus*, *Artemisia Absinthium*, and *Habenaria bifolia.*

Other records which are errors are—*Geranium sylvaticum* in *Bot. Guide* for *G. pratense* L. — *Drosera anglica* Huds. To this is referred Bobart's record in Morison's *Hist.* iii. 620; but Bobart did not discriminate between *D. anglica* and *D. intermedia;* both species are on the same sheet in his herbarium. — *Lepidium latifolium*, recorded by Mr. Bicheno from the peat-pits near Newbury, is probably a *lapsus calami;* he was a fairly competent botanist.—Probably *Aceras anthropophora* and *Thlaspi perfoliatum* from Flower's list are both errors, the last certainly so.—Blackstone's record of *Lathyrus palustris*, although never verified, is not altogether improbable; so far, it has eluded me.—*Pyrus scandica*, which Prof. Babington mentions from Pangbourne, but which Dr. Syme was unable to find, may be rediscovered.—*Chrysosplenium alternifolium*, given as a Berks plant on faith of the Cliefden Wood locality, but this belongs to Bucks.—Bagley Wood, given in my *Flora of Oxon* on faith of Rev. E. Fox, is an error for *C. oppositifolium.*—*Cicuta virosa* L. in Wellington list is an error, as is the record in my *Flora of Oxon* by Rev. E. Fox.—*Rubia peregrina* L. In the neighbourhood of Kintbury or Inkpen, *Reeks.* A very improbable record.—*Hieracium murorum*, from the downs above W. Woodhay and from walls at Elcot, by Mr. Reeks, is a probable misnomer for *H. vulgatum.* — *Scrophularia Ehrhartii* Stev. Near Cumnor. A misnomer; the plant from there is *S. nodosa* L. var. *Bobartii* Pryor.—*Limosella aquatica* L. The Binsey locality is in Oxon. — *Orobanche cærulea* Vill. Near Cookham, but the purple-flowered form of *O. minor* was mistaken for it.— *Stachys germanica* L. According to Bromfield, in *Phyt.* iii. 685, is plentiful in Berks, but never verified. It is also recorded from Ducklington, but that parish is in Oxon. The plant should be found on the north side of the coralline oolite plateau.—The station for *Asarum europæum* L., between Henley and Maidenhead, is most likely in Bucks. — *Potamogeton heterophyllus* Schreb. The locality for North Berks in the "Contributions" I am inclined to think incorrect, as is Mr. Tufnail's Burghfield record in *Flora Oxf.*, which more likely belongs to *P. rufescens.*—*P. heterophyllus* is a plant which should occur.

In Mavor's list of plants, which, he says, "he owes in great measure to Dr. Noehden, of Windsor, and Mr. Bicheno, of Newbury," he remarks of Dr. Noehden's records, "that he has only to regret that the Doctor, having kept no written memoranda, and having made his excursions some years ago, was unable to name the exact habitats of the plants he discovered. The district which he examined, however, includes the vicinity of Windsor, and extends on one side as far as Bagshot Heath, and on the other to Bisham Woods." The following plants in the list I have not been able to verify:—*Allium Schænoprasum* L. Meadows and pastures, *Noehden*, who also gives *A. vineale* L., which is frequent; can the former be a var. of the latter? — *Callitriche autumnalis* is of course *C. hamulata*. — *Carex arenaria* L. is an error. — *C. cæspitosa* is *C. Goodenowia*; and *C. axillaris*, *C. distans*, and *C. stricta* are most probably names rather than plants.—*Drosera anglica* and *Geranium moschatum* are *D. intermedia* and *Erodium cicutarium* respectively.—*Lycopodium Selago* L., Dr. Beeke records from a bog on Ufton Common, a locality more suited for *L. inundatum*.—*Medicago arabica* Dr. Mavor says is by no means rare throughout the upper part of the county, partially cultivated. "Native." I have never met with it. Can he have meant *M. lupulina?* — *Melampyrum arvense* L. "Frequent." Probably *Bartsia Odontites*, which he does not give. —*M. cristatum* L. and *M. sylvaticum* are undoubted errors.—*Dianthus deltoides* L. On old walls, *Mr. Bicheno*, is either a misnomer or a casual. — *Peucedanum officinale* L. *Dr. Noehden.* An error.—*Prunus Padus* L. A misnomer for *P. avium* L.—*Salix pentandra* L. An error. — *Stellaria nemorum* is a mistake for *Cerastium aquaticum*. — *Veronica hybrida* is also a misnomer. — *Ranunculus hirsutus*, from moist clayey places, is doubtless an error. —*Tillæa muscosa*, which Mr. Bicheno records from near Frilsham, is a plant which I have vainly searched for in the district.

Among other erroneous records may be mentioned *Draba inflata*, from a bank opposite Reading Castle; see *Phyt.* 1856, p. 334, which is a form of *D. brachycarpa* that occurs in Oxon and Warwick.

Any information upon the foregoing, or upon any Berks records, would be greatly valued. They may be sent to 118, High Street, Oxford.

GOSSYPIUM LANCEÆFORME Miers MS.

[The recent investigation by Dr. Watt of the genus *Gossypium* has brought under our notice an apparently unpublished paper on the genus by Mr. John Miers, containing the description of a Mexican species collected by Pavon. So far as we can discover, this plant has never been described, but it was referred to in a review (by Dr. Masters) of Parlatore's *Le Specie dei Cotoni*, published in the *Gardeners' Chronicle* for July 28, 1866 (p. 710):—"There is in the British Museum a specimen of Pavon's from Mexico, which is different from any species known to us in the peculiarly long tails to the leaf-lobes, and in the segments of the involucre, which

are exactly like the leaf-lobes in miniature." The specimen came from Herb. Lambert, and is labelled in Pavon's hand, "Gossypium N. E."—Ed. Journ. Bot.]

"**Gossypium lanceæforme** nob.—Annuum? ramosum ramulis subteneribus, obtuse 4-gonis glabris epunctatis; foliis parum cordatis auriculis minimis supra petiolum imbricatis profundissime inciso 3-lobatis, lobis lanceolatis apice longe attenuatis valde divaricatis, terminali lateralibus 2-plo longiore, integris, e basi 3–5 nerviis, nervis eglandulosis, utrinque opacis et obsolete puberulis in nervis tomentosis, petiolo subpatente, debili striato, subtomentoso limbo dimidio breviore; stipulis sub parvis, lineari-acutis, puberulis; pedicello 1-floro oppositifolio petiolo breviore, tereti cinereo-tomentoso; involucro subparvo 3-secto, lobissimo connatis, lanceolato-oblongis, acuminatis, integris, erectiusculis, parallele nervoso glabro; petalis 5 cuneato-rotundatis contortim imbricatis, patentissimis, glabris, flavidis, minute glanduloso-punctatis, infra medium macula elongata rubello signatis; tubo staminea petalis multo breviore, undique filamentis brevissimis numerosissimis instructo, antheris subpeltatis, cæteris ignotis.

"In Mexico. *v. s.* in hb. Mus. Brit. (*Pavon*)."

A NEW SPANISH CERASTIUM.

By A. E. Lomax.

During a botanical expedition in the Sierra de Guadarrama, last June, I discovered a species of *Cerastium* which does not agree with any description in Willkomm & Lange's *Flora Hispanica*; it seems to me to be intermediate between *Cerastium Gayanum* Boiss. and *C. Riai* Desm., and I propose to name it *C. carpetanum*.

Cerastium carpetanum mihi. Annua, dense glanduloso-pubescens, viscosissima; caule a basi divaricato- et dichotomo-ramoso, 3–6″ l.; foliis sessilibus, oblongo-ovatis vel oblongo-lanceolatis, obtusis; cymis dichotomis laxi-interdum densifloris; bracteis omnino herbaceis; pedicellis sub anthesin plus minus curvatis, post anthesin rectis, reflexis, fructiferis demum iterum erectis; calycibus basi subumbilicatis; sepalis altero oblongo ovato vel ovato-lanceolato, obtuso, late scarioso, altero lanceolato, acutiusculo, vix scarioso vel omnino herbaceo, $2\frac{1}{2}$‴ l.; petalis calyci subæquantibus, vel paulo superantibus, breviter bifidis; staminibus 10; capsula calyce subduplo longiore, $5–6\frac{1}{2}$‴ l., basi subinflata, apice curvata, attenuata; seminibus reniformis, dorso canaliculatis, bicarinatis, acute striato-tuberculatis, pallide ferrugineis.

In silva in summo jugo supra Puerto de Navacerrada, montibus Carpetanis, Castella, Hispana. Junio.

Between *C. Gayanum* Boiss. and *C. Riæi* Desm. Differs from *C. Gayanum* in the shortly bifid petals, obtuse leaves, and reniform, acutely tubercled seeds; and from *C. Riæi* in the petals equalling or exceeding the calyx, and the broadly scarious-margined, obtuse sepals.

PYROLA ROTUNDIFOLIA AND ITS EUROPEAN FORMS.

By Arthur Bennett, F.L.S.

This summer, Mr. Marquand was kind enough to send me some fresh specimens of *Pyrola rotundifolia* L. from Guernsey. The examination of these in the light of one observation made by Dr. Boswell (Syme) (*Bot. Ex. Club Report* for 1881, p. 53) on specimens sent by Mr. Sunderland from "The Grande Mare" as "*? arenaria*"—"*arenaria* I think, J. T. Boswell,"—led me to look up the references to the Lancashire, Scottish, and other plants that have passed under various names in our Floras. So far as I can find, no other botanist seems to have considered the Grande Mare plant other than *rotundifolia*.

The Lancashire plant seems always to have been considered a variety since 1846, as on the 12th November in that year Mr. Kenyon exhibited specimens of that plant at the Edinburgh Botanical Society, and then proposed to call it "*P. maritima*," giving the differences for *rotundifolia*. In the 2nd ed. of his *Manual*, Prof. Babington notices the plant. In the 6th ed. of the *British Flora*, Hooker and Arnott gave it the name of *β. bracteata*. In the *Phytologist* for 1853, p. 1119, Mr. (now Prof.) Oliver called attention to a paper by Planchon in the *Annales des Sciences Naturelles* (Ser. 3, xviii. 379), where Planchon identifies the plant of Kenyon with the var. *arenaria* of Koch. In *English Botany*, Dr. Boswell calls it *β. arenaria* Koch, and both Prof. Babington (ed. 8) and Sir J. D. Hooker (*Students' Flora*, ed. 3) call it by the same name. But Nyman seemed to consider there were two plants under these names, as he has "*P. serotina* Mlcq. = v. *arenaria*"; and gives "*P. maritima* Kenyon (Angl., Belg.)," and localises the v. *arenaria* from "Scot. Gall. Batav. Ins. Nordern." I have seen no suggestion in any British Flora as to the Scottish plant, but in *Linnæa* for 1856, pp. 1–88, Dr. Alefeld gives an account of the *Pyroleæ*, where he mentions that he has seen eight specimens in herb. Hooker, from Scotland, which he makes into a species (under a new genus), as *Thelaia intermedia* Alefeld, and puts under his plant the var. *arenaria* of Koch. After this was written, he seems to have come across some mention of Kenyon's *maritima*, as at p. 88 he names it, and supposes it may be his *intermedia*.

I have applied to several Scottish botanists for specimens of *rotundifolia* from near the sea, but I can hear of none such, neither do any of the Botanical Guides suggest such stations.

Another plant was sent to Sir W. J. Hooker (*Phytologist*, l. c.), "gathered on the Yorkshire coast, and since found on the shores of Lancashire by Kenyon." This was a mistake, as the locality, which was really on the Durham coast, in a dene running down to the sea, as Mr. J. G. Baker has kindly informed me. Mr. Baker thinks these specimens "approximate a little towards the var. *arenaria*." Mr. Baker also mentions another station "on the coast near Horden Hill," and wishes, as I do, that someone would look this up again.

This is conflicting and unsatisfactory. We want to know whether these British plants are all the same thing; are they different from one another? are they really distinct from *rotundifolia?* or are they (with others elsewhere) merely a chain of intermediates? Anyone who has examined a large series of *rotundifolia* from all parts of the world will be prepared for great variation in the height of the plant, size of the leaves (6‴ in diameter! to 36‴!), their shape at the base (tapering to cordate), and the size of the flowers. Of course specimens from the shores of the arctic seas and specimens from damp woods will show great differences; the size of the flower in the former (var. *grandiflora*) being much larger, at the expense of the leaves, &c.—a usual state in arctic plants.

Dried specimens are not good material to deal with here; given *fairly* flowered examples of *P. rotundifolia*, *media*, and *minor*, they are easy to separate, but to separate forms of one species is not easy. So I carefully examined five specimens of the Grande Mare plant, and append the result, marking out those characters which are lost in drying:—Style rosy-purplish, shading into purple just below the stigma; stigma deep purple. Anthers yellow to orange-yellow; filaments white. Sepals subparallel for half their length; in many they are fringed at the apex, or slightly jagged; others are subentire, yellowish white (contrasting in this with the much purer white of the petals), paler than as figured in *Eng. Botany*. Pedicels a little longer than the calyx, *when fully expanded*. Bracts on the scapes in four specimens, four; in one specimen, three; those on the raceme, eleven, not confined to under the flowers. In bud the apex of the calyx-segments are contracted and recurved, and look nearly entire and subobtuse. The filaments, stamens, and styles are what is called "drusy" in mineralogy; *i. e.*, in white crystal-like papillæ, which extend to the inner surface of the petals.

Now this, so far as one can contrast it with dried specimens, is pretty fairly intermediate between *rotundifolia* and the var. *arenaria*, perhaps on the whole bearing towards the first. I have not seen a specimen named by Dr. Alefeld, but, looking to his drawing of his *intermedia*, it seems to me that it is not exactly this Guernsey plant; and he notes under *rotundifolia* that he has seen three from Guernsey. And I think I am right in saying there is only the one station known in Guernsey; anyhow, Mr. Marquand (*Flora of Guernsey*, 1891) gives no other.

Yet it would appear that Sir W. J. Hooker did see something in these Scotch specimens that looked different from typical *rotundifolia*, as Dr. Alefeld records that these plants appeared in herb. Hooker as "*P. rotundifolia* var. *squamosa* Hook. MS." Although I have looked through all the *rotundifolia* at Kew, I did not examine these particularly, as I want to see similar ones in the *fresh state*. I have seen or possess specimens of the *arenaria* from all the recorded stations, but here again I want to see fresh Lancashire specimens.

I trust that any botanist who has the opportunity of gathering any of the British plants I have named will carefully examine

(and record) them *fresh*, and I should be very glad to see them myself.

I have not yet been able to see a specimen of the *P. serotina* Mlcq., but if that belongs to *arenaria*, we may put the following names more or less to these *rotundifolia* forms:—

Pyrola rotundifolia Linn. *Sp. Pl.* ed. 1, vol. i. p. 396 (1753).
β. *arenaria* Koch, *Syn. Fl. Germ. et Helv.* ed. 1, p. 478 (1837).
β. *bracteata* Hook. & Arnott, *Brit. Fl.* ed 6, p. 276 (1850).
P. maritima Kenyon, *Phyt.* vol. ii. p. 727 (1846).
P. arenaria Dum. *Boug. Lit. Belg.* p. 41 (1869).
Thelaia intermedia Alefeld in *Linnæa*, vol. xxviii. p. 65 (1856).

And according to Dr. Alefeld—

"*P. rotundifolia* var. *squamosa* Hook. MS.
P. rotundifolia var. *albiflora* Karel. & Kir. MS.
P. intermedia Schleich. *Catalog.*"
P. serotina Mélicocq, *Pl. spont. Béthune in* Caffin, *Annuaires du Pas-de-Calais*, p. 223 (1849); Puel. & Maile, *Herb. loc. de France*, No. 158, Feb. (1854).

In a subsequent communication to the Botanical Society of France (*Bull. Soc. Fr.* i. 162 (1854), Baron Mélicocq records that he considers his plant only a variety of *P. rotundifolia*.

With regard to the eight specimens in herb. Hooker, they are very extreme examples of the Southport plant, and have bracts on the scapes varying from seven to eleven, few flowers, and small leaves; but almost every form between this and the French specimens is represented from Lancashire, although the characters of the pedicels and sepals are better maintained.

A somewhat similar variation occurs in *P. minor*, on the W. European coast; it is the *P. minor* var. *arenaria* Lantzius-Béninga, *Beitr. Kennt. Fl. Ostfrieslands*, p. 40 (1849). I understand that *P. minor* occurs in sand near the sea on the west coast of Scotland, but I have not seen specimens.

SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Concluded from p. 273.)

** Folia suprema lobata.

+ Mexicanum.

137. A. TRILOBATUM Hemsl. Diag. Pl. Nov. p. 24.
Hab. Central Mexico, *Parry & Palmer*, No. 81!

+ + Austro-Americana.

138. A. MUELLERI FREDERICI Gürcke et K. Schum. *l. c.* p. 423.
Hab. Brazil. Prov. St. Catherina, *Schenck*, No. 497.

139. A. SENILE K. Schum. *l. c.* p. 424.
Hab. South Brazil, *Glaziou*, No. 12438!

140. A. Pedræ Brancæ K. Schum. *l. c.* p. 425.
Hab. Brazil. Prov. Minas Geraes.

141. A. elegans St. Hil. Fl. Bras. Mer. i. p. 207. *Sida elegans* Dietr. Synop. iv. p. 852. *S. bella* Steud. Nom. ii. p. 576.
Hab. Brazil.

142. A. Sellowianum Regel in Ann. Sc. Nat. ser. 4, xii. p. 379. *Sida Sellowiana* Kl. in Otto & Dietr. Allg. Gartenzeit. 1836 p. 9.
Hab. South Brazil, *Glaziou*, No. 1457.

143. A. striatum Dicks. in Lindl. Bot. Reg. 1839, Misc. p. 39. *A. pictum* Walp. Rep. i. p. 324. *Sida picta* Gill. in Hook. & Arn. Bot. Misc. iii. p. 155. *S. striata* Dietr. Syn. iv. p. 852; Bot. Mag. t. 3840.
Hab. Brazil. Organ Mts.! Uruguay, *Tweedie*! &c.
A. Thompsoni Hort. is closely allied to the above.

144. A. niveum Gris. Pl. Lorentz. p. 44.
Hab. Argentine Republic, *Lorentz*, No. 175; *Hieronymus & Lorentz*, No. 922.

145. A. Regnellii Miq. in Linnæa, xxii. p. 554. *A. septemlobum* Miq. *l. c.*
Hab. Brazil. Prov. Minas Geraes. St. Paulo. Rio de Janeiro, *Glaziou*, No. 18891!

146. A. Darwinii Hook. in Bot. Mag. t. 5917. *A. Hildebrandtii* Fenzl in hort.
Hab. Brazil. Prov. St. Catherina!

Var. typica Regel in Gartenflora, xxv. p. 317.
Hab. Brazil. Prov. St. Catherina.

Var. trinerve Regel, *l. c.* xxiii. p. 130, t. 794.
Hab. Brazil. Prov. St. Catherina.

Var. expansum Regel, *l. c.* xxv. p. 317.
Hab. Brazil. Prov. St. Catherina.

147. A. venosum Walp. Ann. ii. p. 158; K. Schum. *l. c.* p. 431, t. 76. *Sida venosa* Hort. in Bot. Mag. t. 4463.
Hab. South Brazil.

Var. β. brevicalyx K. Schum. *l. c*, p. 431.
Hab. Brazil. Prov. St. Paulo. St. Catherina.

Var. γ. lanatum K. Schum. *l. c.* p. 431.
Hab. South Brazil, *Mendonca*, No. 1050.

Sect. II. Corynabutilon K. Schum. *l. c.* p. 369. Stigmata decurrente papillosa.

* Folia parva.

148. A. bicolor Phil. in Anal. Univ. lxxxii. p. 322.; K. Schum. *l. c.* p. 433.
Hab. Chili; nr. Santiago, *Philippi*!

** Folia majora.

149. A. ceratocarpum Gay, Fl. Chil. i. p. 331. *Sida ceratocarpum* Hook. & Arn. Bot. Misc. iii. p. 154. *S. stelligera* Poepp. Coll. Pl. Chil. iii. No. 172.
Hab. Chili. Santiago! Campana di Quillota!

Var. PARVIFLORA K. Schum. *l. c.*
Hab. Venezuela; nr. Topo, *Otto*, No. 906.

150. A. VIRIDE Philippi, *l. c.* p. 323.
Hab. Chili. Talcaregue, *E. C. Reed*! Sta. Maria, *E. C. Reed*!

151. A. VITIFOLIUM Presl, Reliq. Haenk. ii. p. 116; Lindl. in Bot. Reg. 1841, t. 57; Bot. Mag. t. 4227. *Sida vitifolia* Cav.; DC. Prod. i. p. 471.
Hab. Chili. Prov. Valdivia! Chiloe! Conception!

152. A. OCHSENII Phil. Cat. Pl. Vasc. p. 27. *Anoda Ochsenii* Phil. in Linnæa, xxviii. p. 613.
Hab. Chili. Prov. Valdivia!
A. discissum Schlecht. in Linnæa, xxv. p. 218, is evidently related to this plant.

153. **A. Garckei**, n. sp. *Sida acerifolia* Garcke in Pl. Lechler. No. 376.
Hab. Chili. Prov. Valdivia!
I have named this plant in honour of Dr. A. Garcke, and also to avoid confusion with *Abutilon acerifolium* Don, Gen. Syst. i. p. 504, which is synonymous with *Sida acerifolia* Lag. Nov. Gen. p. 21. Dr. Garcke has pointed it out as being a distinct species on several occasions (see Engler's Bot. Jahrb. 1893, p. 491, &c.). Its nearest ally is the preceding plant, *A. Ochsenii* Phil. I append a short description:—
Caule fruticoso, foliis viridibus acute 3–5-palmati-lobatis lobo medio majore acuminato cordatis serratis vel crenato-serratis utrinque pilosis petiolatis, alabastris ovatis externe pilosis, floribus axillaribus solitariis vel binis pedunculis gracilibus petiolis longioribus, sepalis ovatis vel triangularibus subacuminatis externe pilosis, petalis late ovatis (in sicco purpureis) calyce multo longioribus, carpellis junioribus calyce brevioribus dorso stellato pubescentibus, seminibus nigrescentibus.
Leaves $1\frac{1}{2}$–2 in. long and about the same broad; petioles $1\frac{1}{4}$–$1\frac{3}{4}$ in. long; peduncles 2–$2\frac{1}{2}$ in. long; petals $\frac{3}{4}$ in. long.
The leaves of *A. Ochsenii* Phil. are rather longer and thicker than those just described, but the principal difference lies in the pubescence of the stem and calyx. The upper part of the stem, the peduncle, and calyx of *A. Ochensii* Phil. are covered with short stellate hairs, while in *A. Garckei* the pubescence is pilose, together with some short stellate hairs, giving it a very different appearance.

Non satis notæ.

* Gerontogea.

154. A. NEELGHERRENSE Munro in Wight Ill. p. 66. *Sida neelgherrensis* Steud. Nom. ed. 2, p. 578.
Hab. India. Nilghiri Mts., *Munro*.

155. A. VELUTINUM Don, Gen. Syst. i. p. 504.
Hab. Guinea.

** Neogea.

156. A. ACERIFOLIUM Don, Gen. Syst. i. p. 504. *Sida acerifolia*

Lag. Nov. Gen. p. 21. *S. spinifex* et forsan *S. palmata* Fl. Mex. Ic. ined. ex DC.

Hab. Mexico.

157. A. BLANDUM Fenzl, Delect. Sem. Hort. Vindob. 1830.

Hab. Mexico. Los Banos, *Heller*.

158. A. MALACHROIDES St. Hil. & Naud. in Ann. Sc. Nat. ser. 2, xviii. p. 49.

Hab. Brazil. Rio Grande do Sul.

Probably the same as *A. Fluckigerianum* K. Schum.

159. A. ANODOIDES St. Hil. & Naud. *l. c.*

Hab. Brazil; nr. Rio de Janeiro.

Compare *A. Neovidense* K. Schum.

160. A. HIRSUTUM K. Schum. *l. c.* p. 437. *Sida hirsuta* Vell. Fl. Flum. vii. t. 20.

Hab. Brazil. Prov. Rio de Janeiro.

161. A. LINEATUM K. Schum. *l. c.* *Sida lineata* Vell. Fl. Flum. vii. t. 25.

Hab. Brazil; nr. Paraty.

162. A. PILOSUM K. Schum. *l. c.* *Sida pilosa* Vell. Fl. Flum. vii. t. 26.

Hab. Brazil. Prov. Rio de Janeiro.

163. A. CORNUTUM Don, Gen. Syst. i. p. 504. *Sida cornuta* Willd. Enum. p. 724.

Hab. South America.

164. A. PULCHRUM Don, Gen. Syst. i. p. 503. *Sida pilchra* Coll. Hort. Rip. p. 129, t. 34.

Hab. Ins. St. Martha.

165. A. ELEGANS Coll. Mem. Tor. xxxv. p. 155. *Sida Collæi* Dietr. Syn. ii. p. 853. *S. elegans* Coll. in Mem. di Torino, xxxv. p. 155.

Hab. Ins. St. Martha.

166. A. TRUNCATUM Don, Gen. Syst. i. p. 503.

Hab. St. Domingo.

167. A. CIRCINNATUM Don, Gen. Syst. i. p. 502. *Sida circinnata* Willd. ex Spr. Syst. iii. p. 119.

Hab. South America; nr. Amazon.

*** Patri Ign.

168. A. MOLLICOMUM Sweet, Hort. Brit. i. p. 54. *Sida mollicoma* Willd.; DC. Prod. i. p. 471. *S. sericea*. Cav. ex descr.

I have seen a plant in Herb. Roemer with the above name from the Berlin Garden, which answers fairly well to the description. If this be correct, *A. mollicomum* Sweet must be placed among the Triovulatæ.

169. A. MICROSPERMUM Don, Gen. Syst. i. p. 501. *Sida microsperma* Cav.; DC. Prod. i. p. 469.

Addenda.

170. A. ATTENUATUM Robins. & Sea. in Pl. Pringl. Distr. 1893.

Hab. Mexico. State of Jalisco. Slopes of mountains near Lake Chapala, *C. S. Pringle*, No. 4354 !

171. A. BENENSE = *Sida Benensis* N. L. Britton in Bull. Torr. Club, 1889, p. 153.

Hab. Bolivia. Junction of Rivers Beni and Madre de Dios, *Rusby*, 1455 !

Since enumerating this plant among the Sidas, I have had an opportunity of seeing a specimen, and find it to be an *Abutilon*.

172. **A. Bridgesii**, n. sp. Caule erecto tereto patenti-piloso, foliis cordatis ovatis acuminatis grosse irregulariter serratis petiolatis utrinque pilosis junioribus fere velutinis, stipulis anguste lanceolatis, floribus paniculatis paniculis foliosis, pedunculis teretibus juxta florem articulatis, sepalis lanceolatis acuminatis pilosis, petalis obovatis (in sicco albo-flavis) calyce longioribus, carpellis (circiter 6) biaristatis aristis scabridis 2–3 spermis, seminibus reniformibus.

Hab. Bolivia, *Bridges* ! Herb. Mus. Brit.

Stem 1½ ft. high, possibly more; leaves 2–2½ in. long, 1½–1¾ in. broad; petioles 1–1¾ in.; petals ⅓ in. long; awns of carpels $\frac{1}{16}$ in. long, possibly lengthening when older.

The leaves of this plant are deeply serrated; the panicle is leafy, and not at all compound. It is closely related to *A. Grevilleanum* Walp.; the calyx of *A. Bridgesii* is not, however, rufescently pilose.

Ad hoc genus pertinentes extant species insequentes ad Sidæ olim relegatæ.

Sida abyssinica Dietr. Syn. iv. p. 859.
S. Guilleminiana Steud. Nom.
S. integrifolia Monti, Mem. Acad. Lyon. 1860, p. 182.
S. olygantha Dietr. Syn. iv. p. 854.
S. patens Andr. Rep. p. 571.

(To be continued.)

SHORT NOTES.

ŒNANTHE SILAIFOLIA Bieb. (p. 236). — This autumn the growth of the above plant has quite settled that the above name is the correct one. One of the difficulties formerly urged was that the original descriptions made the segments of the radical leaves lanceolate, while all the English books called them linear-acute. The fact is, the real radical leaves are very small, and autumnal; and the segments are truly lanceolate, more like the radical leaves of *Œ. Lachenalii* shown in the *English Botany* figure, t. 347, than those of *Œ. pimpinelloides*. The description of Syme therefore is correct as far as it goes, "segments of the lower and upper leaves more alike" (than in *pimpinelloides*), but quite incorrect if by lower

is meant radical leaves. There is another point in the constitution of this plant, its extreme fragility; as it grows up in the spring, unless it can find something to support it, the first high wind lays it flat; not so with *Œ. Lachenalii* and *pimpinelloides*. And both the radical and the lowest spring leaves are very thin and delicate. I have dried as many of these autumnal leaves as my plant would afford, for the Exchange Club.—Arthur Bennett.

Papaver Rhœas var. strigosum Boenn.—Mr. H. N. Dixon's two interesting notes (*Journ. Bot.* 1892, 309; 1893, 310) upon the seeming inconstancy of this variety suggest a query which it might be worth trying to answer. Are these results obtained from seeds produced by flowers of var. *strigosum* that have been fertilized by others of the same variety? I have always seen this variety accompanied by, and in smaller quantity than, typical *Rhœas*, and it is natural to suppose that under such circumstances it might be crossed, and so produce the variable results shown by Mr. Dixon's experiment. I would suggest that *protected* plants of *strigosum* should be fertilized with pollen of the same variety, and the seeds produced from these used for a further trial. The same course might also be taken to prove the constancy or otherwise of the var. *Pryorii*.—Richard F. Towndrow.

Rubus spectabilis Pursh in Kent (p. 183). — I was pleased to see a note by Dr. Masters upon the abundance of this *Rubus* at and near Sandling Park, Hythe. In *Journ. Bot.* 1881, p. 251, will be found a note by myself suggesting the possibility of the plant having originally escaped from the well-known Rhododendron Gardens attached to the Rectory at Saltwood, which were made some fifty years ago by a former rector of that place. Since writing this my suspicions have been confirmed, for I have traced the *Rubus* the whole way to the Gardens, where, however, strange to say, it did not occur so abundantly as at the Sandling Woods below. It bears the local name of the "Woodman's Rose."—J. Cosmo Melvill.

NOTICES OF BOOKS.

American Nomenclature again.

The Metaspermæ of the Minnesota Valley: a List of the Higher Seed-producing Plants indigenous to the Drainage-basin of the Minnesota River. By Conway Macmillan, State Botanist. Reports of the Survey, Botanical Series. I. Dec. 29, 1892. Minneapolis. 8vo, pp. ix, 825.

The Metaspermæ are "otherwise called Angiospermæ," and are on the whole better known under that name. The volume devoted to their enumeration is a handsome book, beautifully printed on good paper, and evinces a vast amount of industry, much of it—as in the elaborate synonymy of the genera—quite out of place in a local flora. The orders are arranged in the sequence

of Engler and Prantl: there are elaborate and careful statistics; and the nomenclature is of the newest kind. It is to this last that I propose to devote a little space.

Mr. Conway Macmillan is one of the most active of the reformers of botanical nomenclature, who, like some other reformers, find a difficulty in agreeing with each other. He was one of the first advocates of "duplicate binomials," and to him we are indebted for the enrichment of nomenclature by *Taraxacum Taraxacum*, *Oxycoccus Oxycoccus*, and similar names. This plan he considers "so excellent that it will scarcely fail of universal adoption, after a season of recalcitrant objection."* *Dis aliter visum;* the "Botanical Club of the American Association for the Advancement of Science" has decided otherwise; to such an authority even Mr. Macmillan, albeit reluctantly, must needs bow; and *Taraxacum Taraxacum* with its numerous analogues passes into that limbo which is largely peopled by the unhallowed creations of American reformers. With these go a large number of galvanised corpses, such as "*Stellularia* Linn. (1748) = *Stellaria* Linn. (1753)," "*Stellaria* Ludw. (1737) = *Stellaria* Linn. (1753)": for the Botanical Club, which shows distinct signs of sanity in its mode of dealing with these questions, accepts 1753 as the date for genera. Unfortunately, its salutary ruling only came in time to be mentioned in the preface; so that the body of the book is adorned by many startling binomials, which have been suppressed almost before they have seen the light of day.

Mr. Macmillan lays down in his introduction various more or less contradictory propositions. Prof. Greene† has dealt with some of these in the spirit of the candid friend. He shows that Mr. Macmillan has "obscured" the subject "with an ingenious sophism": that he "takes up names of families without the least reference to that principle which he admits to be 'fundamental' in nomenclature"; that he has "paved the way to many laxities"; that his abbreviations of titles are very unsatisfactory; and that his Latin phrases have been "constructed in cold indifference to case-endings." "*Nomina nuda* are very freely put forward as the rightful names of species"; and "on the whole the errors in nomenclature, of various kinds, are so numerous, that we should not dare to take anything for granted, as here printed, in the line of the bibliographical." The question naturally arises how far the new *sumpsimus* is preferable to the old *mumpsimus*.

I am quite prepared to accept Prof. Greene's animadversions as accurate and well deserved, and by so doing to resist the temptation to notice Mr. Macmillan's introduction at length: but I propose to examine in some detail his treatment of one or two names, in order that folk may see for themselves his qualifications for the post of reformer. And as the first name which attracted my eye by its unusual appearance was *Cypripedilum*, I will take that as my text.

"It seems clear for apparent reasons that priority should govern in generic names." With this unimpeachable statement Mr.

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* *Bull. Torrey Club*, 1892, 15. † *Erythea*, 1893, p. 118.

Macmillan begins his remarks on the "Citation of Genera." "In general," he says later, "the nomenclature adopted is believed to be thoroughly abreast of the times." I do not find that Mr. Macmillan anywhere justifies the alteration, on grammatical or orthographical grounds, of generic names, while there is evidence to show that he carries his conservatism to extremes. *Scoria*, for example, a name "which an inadvertent printer gave,"* is retained by him, nor am I inclined to quarrel with his doing so, although Prof. Greene is severe upon it, and Mr. Hollick views it "with some amusement."† But how is it possible to reconcile with his "rigid conscientiousness," as Mr. Hollick terms it, the use of *Cypripedilum* for *Cypripedium?* The name stands thus:—

"CYPRIPEDILUM Linn. Gen. 687 (1737) em. Pfitz. (1888)."

Of course no such name is to be found in Linn. Gen., and, according to Mr. Macmillan, it dates from Pfitzer's contribution to Engler & Prantl's *Nat. Pflanzenfamilien*, vol. ii. pt. 6, p. 82. But it may be traced back much further; it appears in two previous papers by Pfitzer, dated 1887 and 1886, and was originated by Ascherson (*Fl. Brandenburg*, p. 700: 1864).‡ *Uropedium* Lindl. is similarly altered by Pfitzer to *Uropedilum*, and he defines a new genus, *Paphiopedilum*, which will have to stand, although the other two will of course revert to *Cypripedium* and *Uropedium*.

After this, will it be believed that Mr. Macmillan in his preface writes: "In the spelling of generic names the following are the preferable forms: *Cypripedium*," &c. No reason is given for this change, and in this the author shows his wisdom: but what becomes of his principles? Is the choice of a name a matter of preference after all? If so, why has this coil been raised? Why should not each man claim the privilege, so freely exercised by Mr. Macmillan, of doing that which is right in his own eyes?

Coming now to the specific names,—there are six under *Cypripedilum*, and none of the old safeguards against misapprehension, such as the placing of the author's name in brackets, or adding a second authority after the first are allowed to clothe the naked falsehood of "*Cypripedilum acaule* Ait. Hort. Kew. iii. 161 [he means 363] (1789)," and the like. I will let Mr. Macmillan define his position. "In order to obtain stability of nomenclature it is necessary to provide that the name of a plant, *the specific name*, can not be changed through caprice or whim." Mr. Macmillan knows as well as I do that "the name of a plant" is not "*the specific name*,"—the italics are his,—but the union of the genus and species: but let that pass. Having promulgated this statement *ex cathedra*, Mr. Macmillan proceeds to show the manifold causes of confusion in nomenclature: "The refusal to

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* *Erythea*, 1893, 121.

† *Bull. Torrey Club*, 1893, 178.

‡ I take this reference from Pfitzer, *Entwurf einer Nat. anordnung der Orchideen*, 1887, p. 11: in the 1886 ed. of the *Flora*, "*Cypripedilum* L." appears on p. 120, without any indication that the name has been emended.

correct mistakes"; "the disinclination to do thorough bibliographical work"; "inaccuracies"; "hastiness"; "unthinking and unbotanical criticism"; and a general unwillingness to be reformed—these are the "little rifts within the lute" which have made the "music mute," and produced discord where harmony should reign. In this book, however, "the specific name chosen is in every case, so far as the writer knows, the one sanctioned by priority regardless of variance with 'custom' or 'authority.'" Mr. Macmillan shall be judged out of his own mouth: and we will first call as witness one of his species of *Cypripedilum*:—

"Cypripedilum spectabile Sw. Act. Holm. (1800)?
C. calceolus var. *g*. Linn. Spec. 1346 (1762).
C. hirsutum Mill. Dict. ed. 8 (1760).
C. reginæ Walt. Fl. Car. 222 (1788).
C. album Ait. Hort. Kew. iii. 303 (1789).
C. canadense Michx. Fl. N. Am. ii. 161 (1863)."

This is how Mr. Macmillan states the case. Of the five synonyms, one is manifestly later than that retained; another is a "variety": omitting these, we have three names, each of which, on his own showing, antedates the one retained. Why are they ignored? He expresses no doubt as to the accuracy of the synonymy, although one synonym is inaccurate:* the names were not previously occupied, and any one of them takes precedence of *C. spectabile*.

Why does Mr. Macmillan cite Swartz as the authority for *C. spectabile?* If he had looked up the reference, he would have seen that Swartz not only says explicitly "*C. spectabile* Salisbury," but also cites as a synonym "*C. album* Hort. Kew." As I showed last month (p. 313), the name to be retained for the plant is *C. Reginæ* Walt.: Mr. Macmillan not only prefers the more recent *spectabile*, but assigns it to a wrong author and date: he writes—

"Cypripedilum spectabile Sw. Act. Holm. (1800)?"

instead of

"Cypripedium spectabile Salisb. in Trans. Linn. Soc. i. 78 (1798)": the real name of the plant being

Cypripedium Reginæ Walt. Fl. Carol. 222 (1788).

The next species, *C. pubescens*, was established by Willdenow, not in "Hort. Berol. i. 13 (1816)," but in Sp. Pl. iv. 143 (1805): and this is not the oldest name of the plant, as I showed at p. 313.

Looking through the book one is struck by such names as these:—

"Hibiscus militaris Cav. Diss. i. 352 (1791).
H. lævis Scop. Del. Fl. iii. 35 (1778)."

Surely here was an opportunity for the re-establishment of a name which every one, from DeCandolle's *Prodromus* to Mr. Jackson's *Index*, has reduced to a synonym, but which, as Mr. Macmillan plainly shows, is "the one sanctioned by priority." *Lævis* is "the

* See *Journ. Bot.* 1893, p. 313.

specific name, which can not be changed through caprice or whim": why then does Mr. Macmillan reduce it, in favour of a later one?

"*Jacksonia dodecandra* (Michx.)" is another illustration of Mr. Macmillan's indiscreet zeal in reformation. *Jacksonia* of Rafinesque is one of Prof. Greene's numerous restorations, and with his usual promptness in enriching nomenclature, he at once ran out four species.* But *Jacksonia* has since received its *coup de grace* from Dr. Britton, with whom I am glad to find myself in accord. Here is what he says about it:—"Jacksonia (trifoliata) = *Cleome dodecandra* L. Now *Cleome dodecandra* L. Sp. Pl. 672, is a well-known Indian species. Rafinesque evidently followed Michaux in supposing that it was North American, and *Cleome dodecandra* Michx. Fl. Bor. Amer. ii. 32 (1803) is indubitably the same as *Polanisia graveolens* Raf. Amer. Journ. Sci. i. 379 (1819), and not at all the plant of Linnæus. In matters of nomenclature we must be exact, and so it seems to me that *Jacksonia* Raf. can only apply to the Asiatic, Linnæan, *Cleome dodecandra*. I do not find any allusion to *Jacksonia* in subsequent writings of Rafinesque, and presume that he discovered his error."† But even Prof. Greene shrunk from allowing Rafinesque's *Jacksonia* to claim the Linnean specific name: whereas Mr. Macmillan employs it, thus adding a new synonym. We may be thankful that Dr. Britton's exposure came in time, as I believe it has done, to prevent the substitution of a new name for the well-known *Jacksonia* of Brown—an invention indicated by Prof. Kuntze—"*Jacksonia* R. Br. 1811 eventuell einen anderen Namen erhalten müsste."‡

I am loth to credit Mr. Macmillan with any of the failings which he so freely attributes to others; but I cannot see how he can reconcile his action with the principles he has laid down. It would be easy to select other instances, but enough has been said to justify the conclusion that he is ill fitted for the post of reformer. It seems to me that we have a right to protest against the publication of schemes which are withdrawn by their authors almost as soon as they have been formulated, and it is not unreasonable to suggest that the neo-American school of nomenclaturists should agree among themselves before they attempt to impose their views

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* *Pittonia*, ii. 174.

† *Bull. Torrey Club*, 1893, 277. From the same paper I cite an illustration of Dr. Kuntze's method of working:—"*Pseva* Raf. In his review of the botanical writings of Pursh, Elliott, Nuttall and others, published in the *Journal de Physique*, lxxxix. 256—262 (1819), Rafinesque states that *Chimaphila* Pursh (1814) is antedated by *Pseva* Raf. Med. Rep. 1809. This is alluded to by Pfeiffer in the *Nomenclator*, and the name has been taken up, and *Chimaphila* displaced by Dr. Kuntze (Rev. Gen. Pl. 390), although neither of these authors appear to have seen Rafinesque's papers in the *Medical Repository*. There were several of these published from 1805 to 1810. I wish to record here that I have recently gone over these papers line by line, and can find no allusion to *Pseva* in any of them; nor have I met with the name in any of Rafinesque's writings. except at the place where he claims it as noted above. It would thus appear to date from 1819 only, and not to interfere with *Chimaphila*."

‡ *Revis. Gen.* 38.

on others. That they have not yet arrived at any common basis of action has been sufficiently shown above, and I have dealt with this more fully in a paper in *Natural Science* for October, 1892 (pp. 610–623)—a paper which I mention here because, not having received any separate copies for distribution, I was unable to call the attention of botanists to it, and it has thus been overlooked by those who study nomenclature: notably by Dr. Kuntze, in the third part of his *Revisio*, of which a notice will soon appear in these pages. While deprecating a false conservatism, or the adoption of convenience as a principle of action, I am convinced that the chief results of the action of the younger American botanists will be the addition to our already overburdened synonymy of a vast number of absolutely useless names, many of them shown to be untenable by those who are responsible for their invention.

I had intended to notice two or three other matters connected with nomenclature, but these must be deferred for the present.

JAMES BRITTEN.

Illustrated Guide to British Mosses; with Keys to the Genera and Species. By the Rev. H. G. JAMESON, M.A. 1893. Eastbourne: published by the Author at 6, College Road. Price 7s. 6d., post-free. Pp. 80; 59 plates. Cloth.

"WHAT is the best book on Mosses?" We have often had this question put to us, and as often have found it impossible to answer offhand. So much depends upon the requirements of the person who asks it. Usually he is thinking of taking up the study of British Mosses, and makes it an essential condition that the book should be well illustrated and cheap—two things hitherto incompatible. In such a case we make a point of advising the would-be bryologist to increase the initial outlay, and buy some three or four books, the relative merits and demerits of which we then proceed to indicate to him.

One of the books which we have most strenuously recommended is Mr. Jameson's *Key to the Genera and Species of British Mosses*, which was originally published in this Journal in the year 1891, and afterwards issued as a separate publication. It was an original and ingenious scheme for simplifying the discrimination of our Mosses, and as such was a great advance upon the work of his predecessors. For they attached all importance to the anatomy of the fruit, and so failed to be of any assistance to the beginner "with regard to such common and easily distinguished Mosses as *Thuidium tamariscinum*, the Hylocomiums, *Mnium undulatum*, &c., which," as Mr. Jameson pointed out, "will probably be among the first he gathers, and none of which are likely to be in fruit." Mr. Jameson, on the other hand, by selecting for his *Key* as far as possible such characters "as can be observed even in barren specimens," made it possible for the student to speedily refer almost any British moss to its proper genus and species.

Having launched the *Key*, the enterprising author set to work

to improve upon it, and now has put before the world the result of his labours—an *Illustrated Guide to British Mosses*, in which the *Key* has "been thoroughly revised, and in great part rewritten" and amplified in various ways. For instance, each genus has an introductory heading touching on the distinguishing characters of the British species, and conveying valuable hints as to how the student may avoid such pitfalls as beset him.

The introduction forms a new feature. Chapters i.–vi. deal with the general structure of the moss plant, and are illustrated by the first seven plates, containing 135 figures. Chapter vii., entitled "Practical Examination of Specimens," mentions what apparatus is required, and the method of using it. But the greatest improvement is the liberal employment of plates—59 in number, and containing over 2400 figures, to illustrate all the species. In them we find a practical illustration of the author's industry and thoroughgoing carefulness. For he has not only made his drawings direct from nature by means of the camera lucida, but has himself lithographed them to prevent their losing correctness in course of being transferred to the stone by some unbryological hand. He has very wisely adopted a uniform scale of magnification throughout: thus leaves are enlarged 15 times, leaf-apices 60 times, and leaf-cells 180 times, "so that the figures show at a glance not merely their shape, but their comparative size." The nomenclature of Schimper's *Synopsis* is used; and the number of British species appears to be 576, which happens to be the number given in Hobkirk's *Synopsis*. On the one hand, some species are added to the Flora—e. g., *Hypnum revolutum* Lindb. (which is synonymous with *Stereodon revolutus* Mitten, Musci Indiæ Orientalis, *Journ. Linn. Soc. Supp.* 1859, p. 97, and with *Hypnum Heufleri* Juratzka) was discovered on Ben Lawers in 1890 by Mr. Jameson. As for *Fissidens rivularis* Spruce, *Rhabdoweissia crenulata* Jameson (= *Didymodon crenulatus* Mitten, *l. c.* p. 23, = *Oncophorus crenulatus* Braithw.), and certain Bryums, they have already gained recognition in Braithwaite's *British Moss-Flora*. On the other hand, some forms of *Bryum*, *Orthotrichum*, *Ulota*, *Campylopus*, &c., which stand as species in Hobkirk's *Synopsis*, are lowered to the position of varieties.

In conclusion, we feel it our duty to point out that the printing is not as good as could be desired. The small type of the key is clear enough, but the larger type of the generic headings is in places distressing to the eyes, suggesting that it was not properly cleaned or inked; and the capitals composing the generic names on pp. 65–69 undulate to a painful degree. But, excepting this and a few misprints (e. g., *Rhynchostegium* shorn of its second "h" some eight or nine times), we regard the book as entirely satisfactory, and cordially recommend it as a specimen of ingenious and industrious workmanship, and as affording most serviceable and valuable aid to all who are interested in our British Moss-Flora.

A. Gepp.

Icones Orchidearum Austro-Africanum extra-tropicarum; or, figures, with descriptions, of extra-tropical South African Orchids. By Harry Bolus, F.L.S Vol. i. Part i. London: W. Wesley & Son. Price £1 1s. 0d.

These fifty excellent plates and descriptions illustrating the Cape Flora are indeed welcome. The species selected range through the whole order from *Liparis* to *Disa* and *Pterygodium*, and we presume the same arrangement will obtain in subsequent parts. Why does not Mr. Bolus monograph the order in order, a task for which he is eminently qualified, and by which he would confer a still greater boon on botanists throughout the world, as well as on those field-botanists, students, and lovers of nature in South Africa to whom he trusts his book will be of service. Scattered "Icones" are of course all very well where nothing better is to be had, but Mr. Bolus must have ready to hand, or could at any rate procure with comparative ease, the materials for this part of a much-needed "Flora." There is a tradition which the younger botanists have received from their fathers of a continuation of the *Flora Capensis*, of which, so the story runs, portions have been elaborated by various workers; but, alas! like other great works, it remains, and seems likely to remain, incomplete.

The chief value of the present work consists in the fact that nearly all the drawings are from living specimens. One envies the fortunate workers who can get fresh plants for their dissections; certainly, as the author remarks in the first lines of his Preface, few orders stand more in need of such illustration than Orchids. It is always a tedious, often a highly unsatisfactory or almost hopeless, task to resurrect flowers so complex in detail from a soppy mess. The author, who is also the artist, has done his work admirably; in each case is given, where possible, a sketch of the plant as a whole, while the flower and its parts are very fully illustrated. In few, but rare, cases the dissections are so numerous as to somewhat unduly crowd the plate. The style adopted is that of the *Refugium Botanicum*, parts only of the drawing being tinted, but quite enough to give an idea of the colour of stem, leaf, flower, lip, or column. This must be cheaper than a coloured plate, and is, we think, otherwise preferable.

Several new species are described; two small Angræcums, a *Habenaria*, two each of *Satyrium* and *Disa*; while that interesting little genus *Pachites*, which unites the characters of the two last, hitherto monotypic, receives an addition in *P. Bodkini*,, a solitary specimen of which was found by Prof. Bodkin on the Muizenberg, Cape Peninsula, early in 1890. Further search in the same and succeeding seasons has proved fruitless; a somewhat remarkable coincidence, as Mr. Bolus points out, Burchell having originally found only one specimen of the first species, *P. appressa*. Kraus found the latter again twenty-four years after Burchell, but, so far as known, it had not been discovered since till quite recently, when Mr. Schlechter, a German botanist and collector who is making an extensive tour through South Africa, came across a couple of plants.

Apropos of the plate of *Pachites Bodkini* (Tab. 26), we note that the indicating figures 3 and 4 have become transposed, so that the lip is described as "one of the petals," and *vice versâ*. This is the only mistake of the kind we have noticed in looking through the book. *Brownleea*, another genus of the *Disa* affinity, but differing in the adhesion of the lateral petals to the odd sepal, and the form of the insignificant lip, is enriched by the description of a new species and its variety, *major*. *Disa* itself supplies a larger proportion of Icones than any other genus, tabs. 27–39 being devoted to it, while the subtribe *Diseæ* is very predominant.

We can enlighten Mr. Bolus on one point. He says of *Pogonia purpurata* (t. 12), "the original description was based upon a plant in Sonder's herbarium supposed to have been found in the Magaliesbergen, whence we may infer that it was most probably collected by Zeyher." It has since been found by Mr. Culver, and though Mr. Bolus has not seen any authenticated specimen, he has little doubt of their identity, as Mr. Culver's specimens agree very well with Reichenbach's brief description, and no other *Pogonia* is known from South Africa. We have in the British Museum Herbarium a *Pogonia* collected by Zeyher (No. 1584), evidently identical with that figured in the *Icones*.

A. B. RENDLE.

Les Orchidées, manuel de l'Amateur. D. Bois. Paris: Baillière & fils. 1893. 12 mo, pp. viii, 323. Price 4 francs.

MESSRS. BAILLIÈRE'S "Bibliothèque des Connaissances utiles" contains some useful handbooks, and the one now before us is an addition to their number. Orchids which for many years were to be found only in few collections, have become, in the author's words, "les fleurs à la mode." Orchid amateurs are now legion, and it is on their behalf that M. Bois has interested himself. His book is divided into two parts, the first, Orchids from a botanical point of view, comprising 282 pages; and the second, Orchids from a horticultural point of view, occupying about a score; while at the end is a glossary of technical terms.

In a few short chapters the author gives a brief but clear, and for his purpose sufficiently full, account of the systematic position, morphology, and geographical distribution of the family. Then follows a synoptic table for running down the genera, in which a number of rough explanatory woodcuts will no doubt be a help. After a list, defining the abbreviations of names of botanists and orchidophilists, with one lieutenant-colonel, come two pages of "principal works treating of Orchids," in which we notice some serious omissions. We look in vain for mention of Lindley's works, which, though only to be purchased with difficulty, are generally accessible, and certainly valuable. Reichenbach's *Xenia Orchidacea* is quoted, but not the *Otia Botanica;* and "Manual of Orchidaceous Plants (Veitch & Sons), London, 1887" is not an accurate citation of the excellent series of manuals for which Messrs. Veitch are responsible. We fear M. Bois is not up to date in literature; has he not heard of the *Orchid Review?* and does he

not subscribe to Miss Woolward's illustrated monograph of *Masdevallia*, several parts of which have appeared during the last two years? Chapter vi., "Ornamental Orchids," takes up nearly the whole of the book. It is a list of the most ornamental orchids, with such descriptions of the genera and species, and other information, as would interest or help those for whom the book is intended. Hints on cultivation are supplied, and references to figures of the different species. Illustrations are occasionally given, many of which are good, but some not. "Useful Orchids" necessarily forms but a short chapter, there being, besides a few drugs, only three worthy of mention, Vanilla, Salep, and *Angræcum fragrans*, the leaves of which, when dried, "have a very pleasant smell."

Part ii. begins with a chapter on the monetary value of orchids, from which we learn little, save that in certain years certain orchids have fetched shockingly high prices. We know nothing of orchid cultivation, but should like to have seen more than about sixteen pages devoted to its consideration in a handbook like the present, and fear that some purchasers will feel similarly disappointed. On the whole, however, M. Bois has produced a useful little book, which the publishers have sent out in a handy form.

A. B. RENDLE.

D. Joseph Gottlieb Kölreuter's Vorläufige Nachricht von einigen das Geschlecht der Pflanzen betreffenden Versuchen u. Beobachtungen, nebst Forsetzungen 1, 2, & 3. (1761–1766.) Herausg. v. W. PFEFFER. Leipzig: W. Engelmann. 1893. 8vo, pp. 266. Price 4 Marks.

THIS neat little volume appears as No. 41 of a series entitled "Die Klassiker der exakten Wissenschaften," edited by W. Ostwald, and published by Wilhelm Engelmann. Important and epoch-making works of men like Galileo, Kant, Helmholtz, Berzelius, Lavoisier, and our fellow-countryman, Dalton, form the subject of previous volumes; but among the forty-two that have already been issued we can find only two others of botanical interest, de Saussure's "Chemical Investigations on Plant-life," in two parts. It would have been a worthy recognition of its centenary to have reproduced Sprengel's wonderful book, a work of more general interest and more easily to be comprehended than, for instance, a treatise on the symmetrical polyhedron, or investigations on the radicals of benzoic acid.

Kolreuter was born in 1733, in the Swabian town of Sulz, where twenty-seven years later he produced his first plant-hybrids. Till 1764 he carried on his researches partly at Sulz, partly at Calw, in Würtemberg, in Dr. Achatius Gärtner's garden. From 1764 till his death in 1806 he resided at Carlsruhe as Professor of Natural History. He made many careful experiments and observations on the sexuality and hybridisation of plants, which he describes and discusses in these four tracts. Pfeffer says he was the first to produce plant-hybrids from a scientific point of view, an honour claimed by the authors of the *Biographical Index* for Fairchild (1719); at any rate, Kolreuter's work on hybridisation

supplied Nägeli with many arguments for his general conclusions, and still forms the basis of the whole question. He was thoroughly convinced of the importance of hybrids in relation to the sexuality of plants, and put beyond doubt the fact of their sexual reproduction, explaining it as clearly as was possible with the methods then at hand. With microscopy still in its infancy, we cannot wonder if some of his observations on the structure and behaviour in fertilisation of the pollen grain led him to adopt incorrect views. He anticipated Sprengel's researches when he emphasised the fact that in many flowers honey-collecting insects disturb the stamens, and are necessary for pollination; and exemplified the principle of reversion when by continued pollination of successive hybrids with pollen from one parent only, he practically reproduced that parent. There is, however, no need to review Kolreuter's work, for which, with its many points of interest, we would refer the student to the present handy edition.

A. B. Rendle.

ARTICLES IN JOURNALS.

Annals of Botany (dated Sept.: issued Oct.). — G. J. Peirce, 'Structure of Haustoria of Phanerogamic Parasites' (3 pl.).—F. O. Bower, 'Structure of Axis of *Lepidostrobus Brownii* Schimp.' (2 plates). — R. J. Harvey Gibson, 'Siliceous deposit in Cortex of *Selaginella*' (1 plate). — M. T. Masters, 'Synanthy in *Bellis*.' — E. H. Acton, 'Changes in Reserve Materials of Wheat on keeping.' —P. Groom, 'Aleurone-layer of Seed of Grasses.' — J. B. Farmer, 'Nuclear Division in Pollen-mother-cells of *Lilium Martagon*.' — O. Stapf, 'The genus *Trematocarpus*.' — A. H. Church, 'A Marine Fungus.'

Annals of Scottish Nat. Hist. (Oct.). — A. Bennett, 'Flora of East Sutherland.'—J. Roy, 'Scottish *Desmidieæ*.'

Bot. Centralblatt. (Nos. 39–44). — H. Heiden, 'Anatomische Charakteristik der Combretaceen.'

Botanical Gazette (Sept. 15). — C. G. Bessey, 'Evolution and Classification.'—'Botany at the World's Fair.'

Bulletin de l'Herb. Boissier (No. 9). — G. Schweinfurth & P. Ascherson, 'Primitiæ Floræ Marmaricæ.' — A. Rodrigue, 'Sur la structure du tégument seminal des Polygalacées.' — L. Radlkofer, *Serjania aluligera*, *S. lateritia*, *S. didymadenia*, spp. nn.—A. Sertorius, 'Zur Kenntniss der Anatomie der *Cornaceæ*.'

Bull. Torrey Bot. Club (Sept.). — T. A. Williams, 'Lichens of the Black Hills.' — G. F. Atkinson, 'Symbiosis in roots of *Ophioglossaceæ*.'—L. H. Pammel, 'Crossing of Cucurbits.'

Erythea (Oct.). — J. B. Ellis & B. M. Everhart, 'New W. American Fungi.'—E. L. Greene, 'Nomenclature.'

Gardeners' Chronicle (Sept. 30). — *Casimiroa edulis* (fig. 63).— (Oct. 7). C. T. Druery, '*Lastrea montana*.'—(Oct. 14). *Gladiolus platyphyllus* Baker, sp. n.

Irish Naturalist (Oct.). — G. Pim & R. J. M'Weeney, 'Fungi of Dublin District.'

Journal de Botanique (Sept. 1, 16). — P. Hariot, 'Les Algues d'eau douce d'Islande.' — A. Franchet, 'Sur quelques nouveaux *Strophanthus*.' — L. Mangin, 'Sur les composés pectiques.' — N. Patouillard, 'Quelques Champignons du Thibet.'

Midland Naturalist (Oct.).— J. E. Bagnall, 'Flora of Warwickshire.'—W. B. Grove, 'Fungi of Abbot's 'Flora Bedfordiensis.' '

Oesterr. Bot. Zeitschrift. (Oct.). — A. Nestler, 'Die Perldrüsen von *Artanthe cordifolia*.' — L. Celakovský, 'Morphologische und biologische Mittheilungen.' — L. Linsbauer, 'Ueber die Nebenblatter von *Euonymus*. — R. H. Franzé, 'Ueber einige niedere Algenformen.'—J. Schuler, 'Zur Flechtenflora der näheren Umgebung Triests.'—J. Murr, 'Ueber *Hieracium pulchrum*.'

BOOK-NOTES, NEWS, &c.

The following American "appreciation" of the portrait of Mr. J. G. Baker (see p. 243) will be read with interest; it is from *Meehan's Monthly* for September:—"He is represented with some Onoclea-like fern on the table before him, about which he is penning notes. The pleasure it gives to see for the first time the facial outlines of one so much beloved is mingled with regret that his hard labours cannot be softened by the use of a fountain pen instead of an old steel one; and instead of having himself bent down to his work till his body is at a right angle with his legs, and his nose but a few inches from his wrist, some better care for his vital organs have not been provided for. It is well worth some thought and a little expense in improved furniture to add ten or fifteen years to the life of such a useful man as J. G. Baker."

Dr. Theodore Cooke has been appointed Scientific Director of the Imperial Institute. Dr. Cooke has botanised for many years in India, and has been engaged for some time upon a Flora of Bombay.

The nineteenth part of the *Flora of British India* brings the enumeration some way into *Cyperaceæ*, on which order Mr. C. B. Clarke has been for some time engaged. The bulk of the part, however, is from the pen of Sir J. D. Hooker, to whose energy and devotion to work must be attributed the steady and satisfactory progress which this important Flora is making. Even in this, however, there must be considerable discrepancy between the earlier and later orders, as the work was begun in 1872, and will hardly be completed for a year or two more. But as contrasted with the *Flora Capensis*, which, in spite of repeated rumours and promises, remains where it did at Harvey's death in 1866, or even with the *Flora of Tropical Africa*, which came to a standstill in 1877, the *Flora of British India* is making rapid way, and its completion is within reasonable distance.

The recent number of the *Icones Plantarum* bears further testimony to Sir Joseph Hooker's assiduity, making, as it does, the seventh of the eight parts devoted to Indian *Orchidaceæ*, the letterpress of which is entirely from his pen. An incidental note in the present instalment gives some notion of the labour which this has involved, and at the same time conveys a graceful tribute to the artist. "The analyses of the orchids figured in these *Icones*, and those described in the pages of the *Flora of British India*, have been a work of great labour, executed first by myself at various periods between 1882 and 1892; and those of the *Icones* have been more recently, and quite independently, revised by my accomplished artist, Miss Smith, who has portrayed the results of our analyses, together with the drawings of the plants themselves."

This recognition of the help rendered is fully in accord with the best traditions, and contrasts somewhat strangely with the action taken in other quarters. We noted at p. 95 the omission of the author's name from the last edition of the Guide to Miss North's paintings at Kew, and we see that no one is responsible for the "Flora of St. Vincent" which occupies the last number (September) of the *Kew Bulletin*. Internal evidence points to Mr. R. A. Rolfe as the compiler, but it is to be regretted that his name is not mentioned, if only for convenience of citation. The *Bulletin* itself has never appeared under any editor's name; and although we believe it to be understood that Mr. D. Morris edits the "miscellaneous information" it contains, this is nowhere stated.

The enumeration of the St. Vincent plants is prefaced by an introductory note on the island, and followed by a summary from which it appears that the total number of flowering plants collected in St. Vincent and the four adjacent islets,—Bequia, Cannonan, Mustique, and Union,—including naturalised plants and those inserted on the authority of the early collectors, is about 1150. The following species are endemic :—

Trigynæa antillana Rolfe.
Spachea perforata Juss.
Meliosma Herberti Rolfe.
Calliandra Guildingii Benth.
Psidium Guildingianum Griseb.
Gustavia antillana Miers.
Tibouchina cistoides Griseb.
Begonia rotundifolia Lam.
Hoffmannia tubiflora Griseb.
Malouetia retroflexa Muell. Arg.
Columnea speciosa Presl.
Peperomia cuneata Miq.
P. Vincentiana Miq.
Croton Guildingii Griesb.
Epidendrum Vincentianum Lindl.
Tillandsia megastachya Baker.

The *Trigynæa* and *Meliosma* are here first described.

An account of Colonel Robert Kyd, the founder of the Calcutta Botanic Gardens, is published in the fourth volume of its *Annals*. He is described as "a keen gardener," but it does not appear that he had any knowledge of plants botanically, although the foundation of so important a garden as that at Calcutta gives him a claim to the esteem and respect of botanists. Some scanty information regarding him is given in the *Biographical List*, to which Dr. King's memoir enables us to add that he was of an old Forfarshire family, and was born in 1746. A portrait, copied from a coloured crayon

in possession of the Agricultural Society of India, is prefixed to the notice.

The second part of the *Index Kewensis* has been passed for press, and may be expected very shortly. This concludes the first of the two volumes, and brings the enumeration down to the end of J (Justicia). So far the work occupies 1268 pages. The following errors in our review of the first part should be corrected:—p. 311, l. 22 from top, for "Pritzel," read "Steudel"; p. 313, l. 3 from top, for "1760," read "1768"; p. 316, l. 14 from bottom, for "Warmingia," read "Warmingii"; l. 14, for "1827," read "1887."

The aëration of the seeds of *Leguminosæ*, of which Prof. Borzí writes in *Malpighia* (vii. 1893, pp. 3–14), formed the subject of two papers (with illustrations) by Prof. A. H. Church, published in this Journal for 1864, pp. 120–122; 1865, p. 324.

The Stationery Office has published Mr. Scott Elliot's Report on the Botany of Sierra Leone—a result of the expedition in which he took part in 1891–2. The economic side of the subject is alone dealt with, as the botanical results will shortly be published by the Linnean Society, and will no doubt contain full information as to certain unfamiliar names which appear in the Report. We are glad to learn that Dr. Dyer "is at present engaged in monographing the genus" *Landolphia*, as no doubt this will involve the definition of certain nude names for which he is understood to be responsible, and which appear in the *Kew Gardens Report* for 1880 and elsewhere. In this Report it was stated (see *Journ. Bot.* 1882, 239) that Dr. Dyer proposed to "communicate descriptions of the new species to the Linnean Society," but this has not yet been done, and it is gratifying to learn that the work is in progress.

The Department of Botany of the British Museum has acquired the great collection of *Diatomaceæ* made by Mr. Julien Deby, which was long without a rival, except in the extensive and valuable series already in the Museum. Mr. Deby's collection consists of a very rich series, arranged systematically; a series of "spread slides"; the collections of Lawrance Hardman, Donkin, Cleve and Möller, Tempere and Peragallo; a fine series of Walker Arnott's; a smaller collection illustrating deposits and geographical areas; and a remarkable series of "type slides." Mr. Deby has had the whole catalogued, and reference to his collection is thus immensely facilitated. Together with the British Museum collections previously acquired, and containing the types of Greville, William Smith, O'Meara, Ralfs, Gregory, H. L. Smith, Delogne, Van Heurck, and many others, the whole series now in the Department of Botany may be estimated at about 50,000 slides of Diatoms of definite botanical and historical value. The union of these great collections, and their accessibility to students, form matter for congratulation to the large class of diatomists in this country.

We are glad to learn that the unpublished material, including many drawings, which the late Mr. R. D. Fitzgerald had accumulated for his *Australian Orchids* is to be issued in due course by his son, who bears the same name.

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NOTES ON PONDWEEDS.

By Alfred Fryer.

(Plates 337 & 338.)

A New Hybrid Potamogeton.

× Potamogeton Billupsii mihi = coriaceus × plantagineus.—Rootstock slender, creeping, fibrous. Stem terete, slender, ascending, slightly branched at the base. Lower leaves narrowly lanceolate, sessile, narrowed towards the base. Upper leaves elliptical, sessile or stalked, 5-ribbed, with fainter intermediate ribs; midrib with chain-like reticulations. Floating leaves with petiole greatly exceeding the membranous or slightly coriaceous lamina, which is abrupt, or sometimes slightly auricled at the base. Stipules herbaceous, patent, acute, often longer than the internodes. Peduncle slender, equal, 1½–2½ in. long, subtended by an ordinary stipule. Flower-spike very short, less than ¼ in., cylindrical, barren. Colour of the whole plant brownish, or olive-green.

× *P. Billupsii* is a most variable plant, differing so widely in different stages and conditions of growth from the normal state above described, that I could not venture to diagnose it until I had carefully watched it under cultivation for two seasons. Some specimens are not easily separable from *P. plantagineus*, others exactly resemble local forms of *P. Zizii*, and others might pass as a *fluitans* form belonging to my *P. crassifolius*. These may be considered the usual states of the species, but another series of forms closely resemble *P. gramineus* v. *graminifolius*, *P. varians*, and the Irish plant which has been placed variously under *P. Lonchites*, *P. Zizii*, and *P. gramineus* v. *graminifolius*.

A single rootstock was discovered in the summer of 1892 at Benwick, in Cambridgeshire, growing in very shallow water amongst a *Zizii* form, which I refer to *P. coriaceus* (for the present), and *P. plantagineus*, no other Potamogetons being near. For a long time I had suspected that many of the *Zizii* forms in this ditch were hybrids with *plantagineus* as one parent, but could get no clear evidence of the correctness of my supposition. After having observed the growth of these Benwick *Zizii*-forms for some years, I was able to see at a glance that the form now described would afford the solution of the origin of the peculiar plant which occurs at Benwick. Although I selected specimens for cultivation with great care, at first I was afraid that I had mixed forms of *P. plantagineus* and *P. Zizii* with the true hybrid form, *P. Billupsii*. In a very short time, however, I was able to secure under cultivation examples of all the states from one rootstock, and almost from one stolon. A single flower-spike was produced, but the flowers never opened, and it was evidently barren. One other spike was found on the wild plant, and this also was infertile, thus confirming the indications afforded by the growth and foliage of the hybrid origin of the species.

Continued cultivation of the plant through the past summer in still deeper water brought out the normal character of the species, which is figured in Pl. 337, fig. 2. This state would be named *P. Zizii* by most botanists, but it differs from *Zizii* in the long-petioled upper leaves, which are rarely produced on branches the lower leaves of which exactly resemble those of the specimen figured. These upper floating leaves are like those of *P. gramineus* (*heterophyllus*), but are less coriaceous.

When growing in shallow water, *P. Billupsii* cannot be separated from *P. plantagineus* by any character known to me. The autumnal shoots when growing in deeper water have the character of those of *P. varians*, or of *P. heterophyllus* v. *major* (Ar. Bennett, *Lond. Catalogue*, ed. 8).

Among specimens collected at Sutton Meadlands, Cambridgeshire, in September, 1892, I found a *Potamogeton* which was growing with *P. varians*, and which I referred at the time to that species, but which I now have little doubt is really of the same hybrid origin as *P. Billupsii*, i. e., *P. coriaceus* × *P. plantagineus*.

The chief interest this new form will have for botanists is its bearing on the question of what many of the fenland forms of "*P. Zizii*" really are. Some years ago, when Mr. Bennett visited Sutton Meadlands with me, he suggested the possible crossing of *P. plantagineus* with some of our *Zizii* forms, and directed my attention to the matter; although at that time we were neither of us prepared to admit that any of the plants we then examined were really hybrids.

Here I may say that I have not used the corrected nomenclature of the species of *Potamogeton* so carefully worked out by Mr. Bennett, because, in the first place, I think it will be more convenient to the readers of these *Field Notes* to retain as far as possible a uniform nomenclature throughout; and, secondly, because I am by no means sure that the ordinary "*Zizii*" of the fens is equal to the *angustifolius* of Presl, even if we eliminate the series of forms I have lumped together under my *P. coriaceus*. Before the nomenclature of the whole genus can be finally settled, we must work out the life-history and true rank of many obscure forms. For species about which there can be no possible mistake, I gladly follow (with the above-mentioned exceptions) the corrected nomenclature of my friend, for which all students of the genus are truly grateful. We have, I believe, the true *angustifolius* in our fenland waters; but it is not by any means common, and differs considerably from the "*Zizii*" of these notes; which I have so widely distributed amongst my correspondents.

My nephew, Mr. C. R. Billups, whose name I have attached to the species described in this paper, assisted me greatly in the field-work which led to its discovery. But for his valuable criticisms on the *Zizii* forms of Benwick I should probably have passed *P. Billupsii* over as a mixture of *plantagineus* and *Zizii* growing entangled together.

DESCRIPTION OF PLATES.—The two very successful drawings by Mr. Morgan which illustrate this paper were made from dried specimens; and the artist has wisely made little or no attempt to represent a living plant, but has simply copied the material placed before him. In plates of such small size, only the *typical* state of the species could be illustrated; the larger autumnal shoots and the stouter autumnal stolons have been omitted for want of space.

PLATE 337.—Fig. 1. The fibrous creeping summer rootstock resembling that of *P. plantagineus* (in autumn this has much thicker stolons, which are not distinctly tuberous, like those of *P. Zizii* and *P. gramineus*, as far as I have been able to observe). Fig. 2. Submerged stem, with *Zizii*-like lower leaves. Fig. 3. Floating leaf from upper portion of rootstock; this is a shallow-water growth, which closely approaches *P. plantagineus* in some examples.

PLATE 338.—Fig. 1. Lower part of floating stem. Fig. 2. Upper part of the same stem; the peduncle appears somewhat thicker than it does in the living plant, owing to pressure in drying.

The accuracy of Mr. Morgan's drawings gives a better idea of the specific characters of the species than any description could do, and shows exactly the resemblances and differences of this remarkable Pondweed to and from its parents.

BIBLIOGRAPHICAL NOTES.

III.—"FLORA CORCIRESE."

UNDER this title, a catalogue of Corfu plants was published in the *Ionian Anthology*—a magazine of general literature which was published in Corfu in 1834–5. Five parts only appeared, the first four of which formed a volume of 961 pp. The contents are extremely miscellaneous, and are written in Greek, Italian, and English—a Greek translation being given of most of the papers in the other two languages.

The Flora, which is written throughout in Italian and Greek, occupies pp. 424–469, 668–703, 940–961 of the first volume, and pp. 180–227 of the remaining part. It is arranged on the Linnean system, ending with Pentandria (Vitis). It is prefaced by a short "Nota dell' Autore," who always speaks of himself in the third person, followed by a list of authors quoted, at the end of which we read, "Ogni qual volta incontrisi l'iniziale *N.*, ovvero l'abbreviatura *Nob.*, intendsi che la specie è nuova, e riportata la prima volta dall' Autore."

The work has been variously cited by different authors, often as an anonymous production: in DC. *Prod.* viii. 284, it is styled "Ionic. anthol.," although on p. 293 of the same volume it is cited as "fl. corc."; in vol. x. of the *Prodromus* it is called "Ion. anth." (p. 41), and "Fl. corcyr. in anth. ion." (p. 52). Pritzel also (No. 10736) treats it as anonymous, but other writers, notably Mr. B. D. Jackson, in the *Index Kewensis*, attribute it to Pieri: thus—

"Anchusa bulbosa [Pieri] in Ionios Anthol. v. 182."*

In cataloguing the library of the Botanical Department, it became desirable, if possible, to ascertain whether this attribution was

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* I note that some authors cite the work by its volume, others (like Mr. Jackson) by its parts.

correct. This is evidently not the case, and it may be well to put the facts on record.

On *primâ facie* grounds, it was by no means unreasonable to suppose that Michele Trivoli Pieri was the author. He had previously published two works on Corfu plants: "Della Corcirese Flora, centurie prima, seconda, e terza, ossia storia di piante trecento, appartenenti al suolo dell' isola di Corfu"—a Government folio publication—in 1814, and an octavo "Flora Corcirensis centuriæ prima et secunda sive enumeratio ducentarum plantarum quas in insula Corciræ invenit M. T. Pieri," in 1824. Pieri's name does not appear in the list of authorities given in the *Flora Corcirese*, and this, coupled with his previous writings on the subject, has no doubt produced the impression that he was the author of this third work on the plants of Corfu. It is also noteworthy that in the *Flora Corcirese* a new *Anchusa* is described as *A. Adami*, "dedicata dall' Autore a Sir F. Adam come caparra di gratitudine fino dell 1825." Sir Frederick Adams was the Lord High Commissioner in Corfu to whom Pieri had dedicated his octavo Flora; and the date 1825—just after the publication of the last-named work, and nine years before the *Flora Corcirese* began—led me to think it possible that this might after all be Pieri's work, published anonymously.

This supposition is, however, negatived by the three following points:—(1) The distinct mention of Pieri's death in the *Flora Corcirese*:—"l'*Ilex Aquifolium* riferito dal defunto Dr. Michele Pieri," &c. (*Ion. Anthol.* i. 958). (2) The subsequent remarks of the author:—"Il *Symphytum officinale* riferito dal Pieri . . . non esiste nell' isola per quanto consta all' autore, che lo ha inutilmente ricercato su tutta la sua superficie" (*l. c.* ii. 186); and "l'autore ne ha trovato un solo esemplare il dì 26 Aprile, 1834. . . . . Ha riprodotto fiori simili al tipo in quest' anno 1835" (*l. c.* 190), Pieri's death having been already referred to (see above) in 1834. (3) The reference by H. Margot and F. G. Reuter in their "Essai d'une Flore de l'île de Zante" (*Mém. Soc. Phys. Genève*, viii. 251 (1839)):—"Cette flore est anonyme, et n'a pas été achevée, vu que l'Anthologie a cessé de paraître": these authors cite it throughout as "Fl. anon."

It may be well to give a list of the novelties described in the *Flora Corcirese*, so far as the species and one genus go. There are besides a number of varieties, including twenty-one forms of the Olive. Some varieties are not described, and, although named, are distinctly stated to belong to the preceding species; and I am somewhat surprised to find included in Mr. Jackson's *Index* such names as *Bromus pubescens* and *B. leptostachys*, which stand thus in the *Flora*:—

"B. Leptostachys. È una varietà del precedente [*squarrosus*], con cui nasce.

B. pubescens. Altra varietà dello stesso a Spighe pelose."

Aphanes monogyna, also included by Mr. Jackson, is defined as "Varietà della precedento [*arvensis*] con un solo pistillo": and it is to be noted that the "N." or "Nob." which the author says he has affixed to his new species is absent from the names of these varieties.

The new species are as follow:—

Scabiosa uniflora Nob.	*Ion. Anthol.*	i.	698.
,, solitaria Nob.	,,	,,	,,
Galium aphyllum Nob.	,,	,,	940.
,, tinctorium Nob.	,,	,,	942.
Rubia micans Nob.	,,	,,	944.
Plantago pulla Nob.	,,	,,	950.
Potamogeton setaceum Nob.	,,	,,	956.
Myosotis echinosperma Nob.	,,	,,	960.
Anchusa bulbosa Nob.	,,	,,	ii. 182.
,, Adami Nob.	,,	,,	,,
Convolvulus canescens Nob.	,,	,,	192.
Campanula pruinosa Nob.	,,	,,	204.
,, muscosa Nob.	,,	,,	,,

Some of these have been referred to well-known species, others remain unidentified, but with this I am not concerned.

Besides these, there is a new genus established—*Raddia*—(*l. c.* i. 448) which is not to be found in Pfeiffer, Durand, Bentham & Hooker, or in such other authors as I have consulted. It comes next to *Anthoxanthum*, and is named "Raddia aculeata. *Nob. Anthoxanthum aculeatum.* Nob." This latter name is reduced by Mr. Jackson to *Crypsis aculeata*, of which the anonymous author says, "ha l'aspetto." He writes:—"Questo nuovo genere così nominato dall' Autore, in memoria del suo diletto amico e concittadino Guiseppe Raddi, celebre Muscologo." Possibly a biography of Raddi might throw some light upon the writer of the *Flora Corcirese*, but of him, as of Pieri, I can find no particulars. Perhaps some Italian botanist, who has access to these, may be able to supply the needed information as to the author of the *Flora Corcirese*.

JAMES BRITTEN.

THREE NEW AFRICAN GRASSES.

By ALFRED B. RENDLE, M.A., F.L.S.

Andropogon Afzelianus Rendle, sp. n. Culmo tereti, pedali, glabro; vaginis pubescentibus; ligula breviter truncata, glabra; laminis quam vaginis 3–4-plo longioribus, linearibus, sensim angustatis, suberectis, pubescentibus, planis, costa media notatis; panicula foliosa, angusta, laxa, ramis solitariis tenuibus, ramulis 2–3-nis, filiformibus; racemis pedicellatis apice culmi ramorumve solitariis, spathas lanceolatas æquantibus, spiculis sessilibus binis, ♀, anguste lanceolatis, internodo vix bilineo separatis; gluma I^ma 7-nervia, sub apice sparse pubescente, callo pilis longis induto; II^da parum longiore, supra carinata, sub apice angustata et in aristam tenuem subito elongata; III^ia 0; IV^a brevissima, hyalina, ab apice profunde bifida aristam robustam infra medium geniculatam emittente; palea hyalina; spiculis pedicellatis ♂ lanceolatis, gl. I^ma acuta, 7-nervia, II^da simili sed 3-nervia.

A somewhat robust plant with a stem about a foot long. The

leaf-sheaths, especially in the upper two-thirds of their length, are covered with long soft hairs, the blades are pubescent, flat, with margins recurved and apex tapering into a short awn, 7–8 in. long, 1½–2 lines broad, with a conspicuous whitish midrib, and numerous inconspicuous veins. The narrow lax panicle is 10 in. long. The racemes are 8–10 lines long, included in the lanceolate spathes, have a slender shortly pubescent stalk, and bear a terminal spikelet, and a sessile and stalked one at each of the two nodes. The two sessile spikelets are similar, ☿, narrowly lanceolate, brown, and 2 lines long. The first glume is 1½ lines long, dorsally flattened, with incurving sides, and a truncate shortly tridentate apex; its callus is placed obliquely on the rachis; the second is slightly longer, rounded below, keeled above, with a thin apical awn ½ in. long. The fourth has a thin membranous deeply bifid base, and between the two acute segments starts a brown awn, strongly geniculate below the middle, 1–1¼ in. long. The thin and delicate palea is a little shorter than the first glume; anthers nearly a line long. The three ♂ florets are nearly 3 lines long, greenish, narrowly lanceolate, on a hairy pedicel 1¼ line long. The outer glume is nearly 3, the inner 2½ lines; both are sharply acute.

The similarity of the sessile spikelets, the solitary racemes, and filiform rachis with two spikelets at each node, puts our species into Hackel's subgenus *Hypogynium*, while the number of sessile spikelets, the absence of the third glume, and the awn-like character of the fourth, run it down to the section *Pseudanthistiria*, with two species, *Andropogon umbellatus* Hack., from Ceylon, and *A. heteroclitus* Nees, from India, China, and perhaps native in South Africa. It is at once distinguished from these by its robust stem, pubescent sheaths and leaves, its long lax uninterrupted panicle, and the long internode between the two sessile spikelets, as well as by the absence of a furrow on the outermost glume of the sessile spikelets and other details.

Collected in 1792–4 by Afzelius in Sierra Leone, and designated *Andropogon* 2; also in the Sierra Leone Boundary Commission, by G. F. Scott Elliot, No. 4108, on roadside near Regent, Sierra Leone, in 1892.

Andropogon Nyassæ Rendle, sp. n. Perennis, culmo erecto, subpedali, tereti, glabro; vaginis ad basin culmi lanatis, culmi glabris, sub apice minute pubescentibus, ore pilosis; ligula breve, truncata; laminis innovationum linearibus, supra angustatis, culmi brevioribus, magis angustatis, illis et harum infimis molliter lanatis, ceteris subglabris, costa media conspicua; paniculæ laxissimæ ramis solitariis–3-nis, tenuibus, pedunculo vix filiforme, spatha lanceolata rufescente vaginato, terminatis; pedunculo spatham sæpissime excedente, superne patenti-villoso, villis fulvis basi tuberculatis; racemis binis, altero breviter pedicellato, altero sessile, densiusculis, 6–7-articulatis; spiculis unifloris, racemi sessilis pari ima diversa, homogama, ♂; rhacheos articulis pedicellisque fulve-pilosis; spic. sess. ☿, brunneis, gl. I^ma^ oblanceolata, supra bicarinata, apice inter carinas truncata, indistincte 6-nervia, callo brevi; II^da^ obtusa, supra basin carinata; IV^a^ brevissime bidentata cum arista vix pollicari

infra medium geniculata, columna hirtula; spic. pedic., gl. I^ma dense fulve-villosa, II^da rufescente, convoluta, lanceolata.

A perennial grass, with apparently a thin creeping rhizome. The somewhat slender culms spring from tufts of leaves surrounded by stiff withered sheaths. These lower leaves have a soft woolly covering, where as on the culm the blades are almost glabrous and the sheaths entirely so, except for a minute pubescence below the pilose orifice. The culm is 11–12 in. long; the leaf-blades at its base and those of the innovations from the older sheaths are linear, tapering gradually to a sharp tip, and 3–6 in. long by ¾–1 line broad; as we ascend the culm they get shorter and more tapering; they are flat, or sometimes folded towards the upper surface; the whitish midrib is conspicuous; there are also several lateral nerves. The short ligule is ⅓–½ line in length. The very lax panicle is 10–14 in. long, its few slender branches are 6–8 in., and terminate in a solitary peduncle which generally protrudes, sometimes an inch or more, from the reddish narrowly lanceolate spathe whose length varies from 1¾–2⅓ in. The peduncle is covered for about ½ in. at its apex with long soft spreading fulvous hairs springing from tubercles. The spikelets, especially the male, the pedicels, and joints of the rachis also bear short thick fulvous hairs. The stalked spikelets are unawned; the sessile have a flexuous obtusely geniculate awn 10–11 lines long.

Buchanan, Nyassaland, 1891, No. 1423.

This species belongs to the *hirtus* group, and comes nearest to the Abyssinian *A. fulvicomus* Hochstett.; it is, however, a smaller and less robust plant, differing in its shorter, much narrower and pubescent leaves, with a ligule of ⅓–½ line long, the latter being 1½ lines in the Abyssinian plant; also in its very lax simple panicle with but few branches, and its slightly larger reddish male spikelets. Hackel, in his monograph of the *Andropogoneæ*, reduces *A. fulvicomus* to a variety of *A. rufus* Kth., but Buchanan's plant is distinguished from the latter not only by the long tubercular hairs on the apex of the common peduncle and their fulvous nature on the racemes and spikelets, characters which it shares with *A. fulvicomus*, but in addition by the very distinct leaf-characters, the short narrow linear blades, and their woolly covering.

Ischæmum Tallanum Rendle, sp. n. Planta 1–2-pedalis, culmo tenue, glabro, basi tereti, supra longitudinaliter sulcato, mox ramificante; ramis paucis, longis, culmo similibus; vaginis glabris, ore pilosis; ligula membranacea, glabra, semicirculari; laminis planis, lanceolatis, glabris vel superioribus minute pubescentibus; panicula culmum ramosque terminante, densa, triangulari; spiculis ad quemvis rhaceos nodum binis, bifloris, homogamis, aristatis, primaria pedicellata a pedicello demum soluta, secundaria sessile demum cum rhacheos articulo accumbente di-jungente; flore inferiore ♂, superiore ☿; rhacheos articulis triangularibus, angulis albo-villosis; pedicellis dorso rotundatis glabris, angulis lateralibus albo-villosis; spic. sess. gl. I^ma chartacea, ovata, breviter bifida 8-nervia, dorso plana, supra medium bicarinata et pilosa, infra glabra, callo truncato; II^da supra carinata, apice acuta, 5-nervia;

III^{ia} membranaceo-chartacea, margine hyalina, acuta, sub apice carinata, 3-nervia, paleam hyalinam et florem ♂ triandrum fovente; IV^{a} hyalina, apice bipartita, e sinu aristam perfectam flexuosam glabram exserente; palea glumam æquante, hyalina, acuta; ovario glabro; spic. pedic. gl. I^{ma} carinata, acuta; II^{da} vix breviore, superne solum carinata.

An erect grass 1–2 ft. high, with a few slender straggling branches. The glabrous leaf-sheaths are $1\frac{1}{4}$–2 in. long, at the base of the culm longer than the nodes, above and on the branches generally shorter. The leaf-blades are flat and lanceolate, with a whitish midrib, in the lower part of the stem $2\frac{1}{2}$ in. long by $2\frac{1}{2}$ lines broad, above about 1 in. long by $1\frac{1}{2}$ line broad. The dense inflorescence, 1 in. long, is narrowest at the base, and consists of one sessile raceme and a shortly stalked axis, which branches once at the first node, making in all three of the so-called racemes, only one of which was perfect in the specimen, and had six nodes; the others were broken at the third and fourth respectively. The joints of the rachis and the pedicels are somewhat thick and stiff, the former easily separating, each bearing a sessile spikelet and a pedicel, from which the spikelet is also easily detached. The pedicels are rounded on the back, and villous only on the lateral angles; the joints of the rachis, on the contrary, have three white-haired angles. The outer glumes are chartaceous, the inner becoming more or less hyaline. In the sessile spikelet the first glume is $1\frac{3}{4}$ line long, separated from the short truncate callus ($\frac{1}{2}$ line) by a brown horizontal constriction, pilose in the upper half, with two lateral keels; there are two distinct nerves on either side, with four less distinct and more crowded central ones. The second glume is $2\frac{1}{2}$ lines long, rounded below, with a median keel above, which runs out into a sharp point. The fourth is $1\frac{1}{2}$ line long, hyaline, with 2 subacute segments, and a ciliate margin, with a flexuous awn 4–5 lines long. The awn is glabrous, geniculate below the middle, having a brownish twisted column, and an upper flexuose yellowish portion. The first glume of the stalked spikelets is medianly keeled throughout its length, and has, like the second, a sharp awn; it is 8-nerved and slightly hairy, while the second is only keeled in the upper part, 5-nerved, and densely hairy. The stalked spikelet otherwise resembles the sessile. The stamens in the ☿ flower evidently fall very soon; in fact, I could only find them in one spikelet, though I examined all on the inflorescence; the glabrous ovary had evidently been fertilised.

Scott Elliot, Sierra Leone Boundary Commission, No. 4927. On granite rock by waterside, Ninia, Talla, Feb. 1892.

A distinct species of the subgenus *Euischæmum* (Hackel).

SYNOPSIS OF GENERA AND SPECIES OF *MALVEÆ*.

By Edmund G. Baker, F.L.S.

(Concluded from p. 338.)

ABUTILON.

Species exclusæ.

ambiguum Turcz. = *Sida Lindeniana* Turcz.
Chapelieri Baill. = *Wissadula Chapelieri* Bak. fil.
contractum Sweet = *Wissadula rostrata* Pl.
crinitum Klotz. = *Wissadula hirsuta* Presl.
excelsior Don = *Wissadula zeylanica* Med. var.
densiflorum Walp. = *Sida densiflora* Hook.
ferrugineum H. B. K. = *Wissadula ferruginea* Garcke et Schum.
fœtidum Moench. = *Bastardia viscosa* H. B. K.
gymnanthemum Gris. = *Wissadula gymnanthemum* K. Schum.
hernandioides Sweet = *Wissadula rostrata* Pl.
laxiflorum Guill. & Pen. = *Wissadula rostrata* Pl.
lepidum F. v. Muell. = *Sida lepida* F. v. Muell.
Lechenaultianum Sweet = *Wissadula rostrata* Pl.
leucanthemum St. Hil. = *Wissadula rostrata* Pl.
Lucianum Sweet = *Wissadula rostrata* Pl.
marmoratum Hort. = *Hibiscus* sp.
mucronulatum A. Gray = *Wissadula mucronulata* A. Gray.
Newberryi S. Wats. = *Horsfordia Newberryi* A. Gray.
nudiflorum Sweet = *Wissadula nudiflora* Garcke.
occidentale Medic. = *Gaya occidentalis* H. B. K.
patens St. Hil. = *Wissadula patens* Garcke.
pariflorum St. Hil. = *Wissadula rostrata* Pl.
polyandrum Don = *Wissadula* sp.
polyantha Sweet = *Wissadula rostrata* Pl.
periplocifolium Sweet = *Wissadula zeylanica* Med.
pulchellum Sweet = *Plagianthus pulchellus* A. Gray.
pulchrum Don = *Plagianthus pulchellus* A. Gray.
rigidum Don (*Sida rigida* Dietr.) = *Sida rhombifolia* L.
rufescens Turcz. = *Wissadula ?*
spicatum H. B. K. = *Wissadula spicata* Presl.
sundaicum Don = *Wissadula* sp.
verbascoides Turcz. = *Wissadula rostrata* Pl.
wissadifolium Gris. = *Wissadula gymnanthemum* K. Schum.

XXIII. SPHÆRALCEA St. Hil. Pl. Usuel. t. 52. Bracteolæ 3 liberæ vel basi coalitæ. Styli rami filiformes vel clavati. Carpella 1–3-sperma intus nuda quum 1-sperma superne vacua.

§ 1. Pseudo-malvastrum. Bracteolæ lineares vel lanceolatæ. Carpella 1–2-ovulata. Ovula superior etiamsi exsistit rare maturescit.

+ Boreali-Americanæ vel Mexicanæ.

* Flores sulphurei vel albi rarissime rosei.

1. S. axillaris S. Wats. in Proc. Am. Acad. xxiv. p. 41.
Hab. Lower California, Mulege.

2. S. SULPHUREA S. Wats. *l. c.* xi. p. 125.
Hab. Lower Californian Islands!

3. S. PALMERI Rose in Contr. Nat. Herb. i. p. 23. Caulibus erectis vel adscendentibus canescente furfuraceis, foliis ovatis vel subrhomboideis flavo- canescentibus subvelutinis margine sinuatis basi cuneatis apice obtusis parce lobatis laminam petiolo longiore vel subæquante veniis subtus prominentibus floribus subpaniculatis, bracteolis linearibus, calyce brevioribus, sepalis ovatis acutis striatis canescentibus, petalis obovatis (in sicco flavo-albis), carpellis ignotis.

Hab. Guadelupe Is., *Dr. E. Palmer*, Nos. 867! 868!

Stem or branches 6 in. to 1 ft. long, possibly more; petals about $\frac{1}{3}$ in. long.

The flowers of this plant are subpaniculate, and apparently sulphur-coloured. The leaves are rather thick, and with a decidedly cuneate base.

4. S. ALBIFLORA Rose *l. c.* p. 81. Caule erecto canescente furfuraceo, foliis lanceolatis vel ovato-lanceolatis margine sæpe crispis irregulariter crenatis utrinque griseo-subvelutinis basi subcordatis laminam petiolo subæquante vel longiore, floribus axillaribus sparse aggregatis, bracteolis linearibus calyce multo brevioribus, sepalis triangularibus acutis in mediam striatis, petalis (in sicco flavo-albis) calyce duplo longioribus, carpellis junioribus externe albo-stellato-pubescentibus.

Hab. Lower California. Santa Rosalia, *Dr. Palmer*, No. 205!

Stem 10 in. to 2 ft., possibly more; leaves about 1 in. long by about $\frac{3}{4}$ in. broad; calyx $\frac{1}{4}$ in. long; petals $\frac{1}{3}$ in. long.

The leaves of this plant are covered with a grey pubescence. It is related to the preceding species, and to *Sphæralcea ambigua* A. Gray.

* * Flores coccinei croceo-coccinei aurantei vel rosei rare albi.

5. S. COULTERI Asa Gray in Proc. Am. Acad. xxii. p. 291. *S. Fendleri*, partly, Torr. Mex. Bound. p. 29. *Malvastrum Coulteri* S. Wats. in Proc. Am. Acad. xi. p. 125.

Hab. W. Arizona. Mexico, *Palmer*, No. 171!

6. S. PEDATIFIDA A. Gray, *l. c.* *Malvastrum pedatifidum* A. Gray, Pl. Lindh. 7, p. 160. *Sidalcea Atacosa* Buckley in Proc. Acad. Phil. 1864, p. 449.

Hab. Texas. On the Rio Grande from El Paso downwards!

7. S. PEDATA Torr. in Pl. Wright, i. p. 17. *Sida grossulariæfolia* Hook. & Arn. Bot. Beechey, p. 326. *Malvastrum grossulariæfolium* A. Gray, Pl. Fendl. p. 21. *M. coccineum* A. Gray, *l. c.*, partly. *M. coccineum* var. *grossulariæfolium* Torrey, Stanb. Rep. p. 384. *Malva Creeana* in Bot. Mag. t. 3698, perhaps.

Hab. W. Texas to S. Arizona. N.W. Nevada.

Var. ANGUSTILOBA A. Gray in Proc. Am. Acad. xxii. p. 292. *Malvastrum coccineum* var., Gray, Pl. Wright, i. p. 17.

Hab. Valley of the Limpia.

8. S. CALIFORNICA Rose *l. c.* p. 66. Caule erecto ligneo tereto fulvo-stellato, foliis lanceolatis vel ovato-lanceolatis basi subcordati vel cuneatis apice obtusis vel subacutis utrinque pubescentibus crenatis laminam petiolo æquante vel longiore, floribus axillaribus aggregatis vel subaggregatis pedicellis gracilibus sæpe torquatis, bracteolis linearibus, calyce externe stellato-pubescentibus, sepalis triangularibus vel lanceolatis acuminatis vel subacuminatis, petalis calyce longioribus auranteo-flavis, carpellis 1-spermis superne vacuis reticulatis.

Hab. Lower California, La Paz, *Dr. E. Palmer*, No. 18!

Stem 1–4 ft., possibly more; leaves 1–1¾ in. long; calyx ¼ in. long; petals ⅓ in long.

This must be closely related to the plant described by Prof. E. L. Greene in the Fl. Franciscana, pt. i. p. 109, as *Malvastrum multiflorum*.

9. S. MUNROANA Spach. Hist. Veg. iii. p. 355. *Malva Munroana* Dougl. in Lindl. Bot. Reg. t. 1306. *Nuttallia Munroana* Nutt. in Journ. Acad. Phil. vii. p. 16. *Malvastrum Munroanum* A. Gray, Pl. Fendl. p. 21, excl. syn.

Hab. Northern Interior Region, United States!

10. S. LINDHEIMERI A. Gray in Pl. Lindh. ii. p. 162.
Hab. S. Texas. Mexico.

11. S. HASTULATA A. Gray, Pl. Wright, i. p. 17.
Hab. S.W. Texas. New Mexico! Mexico!

12. S. SUBHASTATA Coulter, Contr. Nat. Herb. No. ii. p. 32.
Hab. S.W. Texas. New Mexico. Mexico.

13. S. FULVA Greene, Pitt. i. p. 201.
Hab. Cedros Island.
May belong to next section.

* * * *Flores lilacini.*

14. S. VIOLACEA Rose *l. c.* p. 81.
Hab. Lower California. Santa Rosalia, *Dr. Palmer*, No. 206.

+ + Australi-Americanæ.

15. S. HORNSCHUCHIANA = *Malva Hornschuchiana* Walp.
Hab. Peru, *Meyer*! Arequipa, *Lord Colchester*!

16. S. CAPITATA Phil. in Pl. Nuev. Chil. 1893, p. 8.
Hab. Chili.

17. **S. crispa** Hook. MSS. in herb. Kew. Caulibus tenuibus adscendentibus, foliis pinnatisectis segmentis interdum lobatis oblongis apice acutis utrinque tenuiter stellato-pubescentibus, floribus axillaribus ad extremitates caulium aggregatis vel sub-aggregatis, bracteolis calyce brevioribus, sepalis triangularibus vel lanceolatis acuminatis, petalis calyce longioribus, carpellis 1-spermis superne vacuis lateribus inferne reticulatis dorso rugosis.

Hab. Patagonia, *J. L. Williams Andrews*!

This plant has finely divided leaves, and is more or less covered with a silvery pubescence.

Stems about 10 in. long; petals about ⅓ in. long.

"Plant spreading and bushy; blossom of a brilliant scarlet or deep crimson, like a minute poppy; found in clay soil, on low plains, especially near burrows of such animals as the biscacha and dolichotis."

18. **S. Mandoni,** n. sp. Caule vel ramo virgato ligneo, foliis lanceolatis pennatinervatis serratis vel crenato-serratis basi cordatis vel subcordatis apice acutis laminam petiolo multo longiore utrinque pubescentibus discoloris vel subdiscoloris subtus pallidioribus, stipulis lanceolatis acuminatis, sepalis lanceolatis acuminatis externe cinereo-subvelutinis, floribus axillaribus pedunculatis vel subsessilibus versus apicem caulium aggregatis, petalis obovatis (in sicco purpureis), carpellis externe pubescentibus biaristatis 1-spermis aristis pubescentibus seminibus reniformibus.

Hab. Bolivia. Prov. Larecaja. "Viciniis Sorata in nemoribus," *G. Mandon*, No. 808! Alt. 2800-3000 m.

Stem or branches 1–2 ft.; leaves 3–5 in. long; petiole ½–1 in. long; petals ¾ in. long.

Allied to *S. angustifolia* St. Hil.

§ 2. Eusphæralcea. Bracteolæ lineares vel lanceolatæ liberæ. Carpella 2–3-ovulata, 1–3-sperma.

* Neogeæ.

⊙ Folia haud aceriformia.

19. S. angustifolia G. Don, Gen. Syst. i. p. 465. *Malva angustifolia* Cav.; DC. Prod. i. p. 435; Bot. Mag. t. 2839. *Sphæroma angustifolium* Schlecht. in Linnæa, ii. p. 353.

Hab. Mexico!

Var. cuspidata A. Gray in Proc. Am. Acad. xxii. p. 293. *Sphæralcea stellata* Torr. & Gray, i. p. 228. *Sida stellata* Torr. in Ann. Lyc. N. Y. ii. p. 171. *Malva stellata* Dietr. Synop. iv. p. 816.

Hab. Texas to Arizona and S. Colorado! Mexico!

20. S. ambigua A. Gray in Proc. Am. Acad. xxii. p. 292. *S. Emoryi* Torr. in Ives Colorado Exp. Bot. p. 18.

Hab. Arizona. West Texas. Nevada. Lower California! Mexico!

21. S. Emoryi Torr. in Gray Pl. Fendl. p. 23.

Hab. Arizona! California! Mexico! New Mexico!

22. S. Fendleri A. Gray, Pl. Wright. i. p. 21. *S. miniata* A. Gray, Pl. Fendl. p. 19, non Spach. *S. incana* var. *Fendleri* Pl. Wheel. p. 7.

Hab. West Texas to Arizona! New Mexico!

23. S. incana Torr. in Gray Pl. Fendl. p. 23.

Hab. S.W. Texas. New Mexico! Arizona. Mexico!

Var. dissecta A. Gray, Pl. Wright. p. 21.

Hab. New Mexico, *Wright*!

24. S. Wrightii A. Gray, Pl. Wright. ii. p. 21.

Hab. N. Mexico, *Wright*, No. 1330!

25. S. Rusbyi A. Gray in Proc. Am. Acad. xxii. p. 293.

Hab. Arizona, *Dr. Rusby*.

26. S. FLORIBUNDA Schlecht. in Linnæa, xi. p. 363.
Hab. Mexico. Oaxaca, *Galeotti*, No. 4088!

Var. PAUCIFLORA. Floribus axillaribus pedunculis 1–3-floris petiolis multo longioribus foliis superne nigrescentibus subtus incano-pubescentibus bracteolis lanceolatis acutis vel acuminatis calyce brevioribus, petalis (in sicco cœruleis) obovatis, carpellis reniformibus 1–3-spermis, seminibus reniformibus.
Hab. Mexico, *Coulter*, No. 800!
Leaves ovate, slightly lobed, 1½–2 in. long, the same broad; petals nearly 1 in. long; capsules ⅓ in. long. Possibly may be a distinct species.

27. S. MINIATA Spach. Hist. Veg. iii. p. 352; Bot. Mag. t. 5938. *Malva miniata* Cav.; Jacq. Frag. t. 132; DC. Prod. i. p. 435. *Sphæroma miniata* Garcke in Bot. Zeit. 1853, p. 847.
Hab. Argentine Republic!

Var. MENDOCINA K. Schum. *l. c.* p. 451.
Hab. Argentine Republic!

Var. RHOMBIFOLIA K. Schum. *l. c.* *S. rhombifolia* Gris. Pl. Lorentz. p. 44.
Hab. Argentine Republic. Prov. Tucuman!

Var. CISPLATINA K. Schum. *l. c.* *S. Cisplatina* St. Hil. Pl. Usuel. t. 52.
Hab. Argentine Republic! Paraguay. Uruguay!

28. S. BONARIENSIS Gris. Pl. Lorentz. p. 44. *? Malva Bonariensis* Cav.; DC. Prod. i. p. 433. *? M. prostrata* Phil. in Ann. Univ. 1870, ii. p. 163.
Hab. Argentine Republic!

Var. LACINIATA K. Schum. *l. c.* *Cristaria heterophyllum* Gris. *l. c.*, non Hook. & Arn.
Hab. Argentine Republic. Prov. Cordoba, *Lorentz*, No. 284; *Hieronymus*!

29. S. OBTUSILOBA Don, Gen. Syst. i. p. 465. *Malva obtusiloba* Hook. in Bot. Mag. t. 2737. *M. Berteroniana* Steud. in Flora, 1856, p. 437. *S. rupestris* Phil. in Linnæa, xxxiii. p. 26. *S. Gayana* Phil. *l. c.* p. 23 (*S. obtusiloba* Gay). *S. collina* Phil. *l. c.* p. 24. *S. Berteroniana* Phil. *l. c.* p. 23, ex. descr. *S. floribunda* Phil. *l. c.* p. 25, ex. descr. *S. coquimbana* Phil. in Anales Univ. 1872, p. 680. *S. Vidali* Phil. Pl. Nuev. Chil. 1893, p. 6, ex. descr. *S. circinata* Phil. *l. c.* p. 7, ex. descr.
Hab. Chili!

30. S. VELUTINA Presl, Reliq. Haenk. ii. p. 124. *S. valparidisea* Phil. in Pl. Nuev. Chil. 1893, p. 12. *S. choapina* Phil. in Linnæa, xxxiii. p. 27, ex. descr.
Hab. Chili!

31. S. CHILENSIS Gay, Fl. Chilensis, i. p. 293. *S. grandifolia* Phil. Pl. Nuev. Chil. 1893, p. 5, ex. descr. *S. glabrata* Phil. in Linnæa, xxxiii. p. 22, ex. descr. *S. viridis* Phil. Pl. Nuev. Chil. p. 8, ex. descr.
Hab. Chili!

⊙ ⊙ Folia aceriformia.

32. S. ACERIFOLIA Nutt. in Torr. & Gray Fl. i. p. 228; Bot. Mag. t. 5404. *S. rivularis* Torr. in Pl. Fendl. p. 23. *Malva rivularis* Dougl.; Hook. Fl. Bor. Am. i. p. 107.

Hab. British Columbia to Rocky Mts.! Dakota. Illinois.

33. S. LONGISEPALA Torr. Bot. Wilkes Exp. p. 255.

Hab. Washington Territory, on the Upper Columbia.

Dr. Gray, in Proc. Am. Acad. xxii. p. 294, has *leptosepala*.

34. S. ABUTILOIDES G. Don, Gen. Syst. i. p. 465. *Malva abutiloides* L.; DC. Prod. i. p. 435; Jacq. Hort. Schoen. 3, t. 293; Sims in Bot. Mag. t. 2544. *Phymosia abutiloides* Desv. in Hamilt. Prodr. Pl. Ind. Occ. p. 50.

Hab. Bahamas! Carolina.

A. Eggersii Bak. fil. is related to the above.

* * Gerontogeæ.

35. S. ELEGANS Don, Gen. Syst. i. p. 465. *Malva elegans* Cav.; DC. Prod. i. p. 445. *M. anomala* L. & O. Ic. p. 51, t. 22?

Hab. Cape of Good Hope.

36. S. DREGEANA Harv. in Fl. Capensis, i. p. 165.

Hab. Cape of Good Hope, *Dreye*!

The stem of this plant is pilose.

37. S. TRIFLORA Hassk. Pl. Jav. Rar. p. 300.

Hab. Java.

I have not seen specimens of this plant; it may be only cultivated in Java.

38. **S. malvastroides,** n. sp. Caule erecto lignoso ramoso ramibus junioribus stellato-pubescentibus, foliis ovatis plus minusve trilobatis margine sinuatis crenatis vel crenato-serratis pannosis parce discoloris flavo-incanis et aspero-tomentosis petiolatis, floribus axillaribus solitaris pedunculis petiolis subæquantibus, petalis (in sicco roseis) obcuneatis calyce longioribus, sepalis lanceolatis acuminatis externe incano-tomentosis, bracteolis lanceolatis liberis calyce brevioribus, carpellis reniformibus 2-spermis dorso stellato-pubescentibus, seminibus reniformibus.

Hab. Cape. Graaf Reinet, *Bolus*, Nos. 390 et 390 bis! Mountain tops, alt. 4500 ft.

Leaves ¾–1½ in. long; petals ⅓ in.

This plant is closely allied to *Malvastrum asperrimum* Gray & Harv.

§ 3. SPHÆROMA Harv. in Fl. Capensis i. p. 166 (genus). Bracteolæ connatæ persistentes 3-fidia.

⊙ Bracteolæ externe processibus filiformibus non obtectæ.

39. S. JULII = *Sphæroma Julii* Harv. *l.c.* *Lavatera Julii* Burch.; DC. Prod. i. p. 438. *L. biflora* E. Mey.

Hab. Cape. Caledon River, *Burke*! District of Albert, *Cooper*, No. 608! Orange River, *Burke*! District of Hopetown, alt. 4500 ft., *Bolus*!

40. S. PROSTRATA = *Sphæroma prostrata* Harv. *l. c.* *Lavatera prostrata* E. Mey.

Hab. Cape. Bank of Orange River, *Burke*!

Var. β. MOLLIS Harv. *l. c.*

Hab. Cape, *Drège*, Nos. 7325 a & b!

⊙ ⊙ Bracteolæ externe processibus filiformibus obtectæ.

41. S. PANNOSA Bolus in Journ. Linn. Soc. xxv. p. 156.

Hab. East Griqualand. Mt. Currie, *W. Tyson*, Herb. Norm. Austro-Afric. No. 475!

§ 4. MELIPHLEA Zucc. Pl. Nov. Fasc. ii. p. 51, t. 9 (genus). Bracteolæ ovatæ vel spathulæformæ disco lævi 5-lobo calycis basin vestiente.

42. S. UMBELLATA St. Hil.; Hemsl. in Biolog. Centr. Am. i. p. 114. *S. Galeottii* Turcz in Bull. Soc. Mosc. 1858, p. 186. *Malva umbellata* Cav.; DC. Prod. i. p. 435. *S. vitifolia* Hemsl. Biolog. Centr. Amer. i. p. 114. *Meliphlea vitifolia* Zucc. Pl. Nov. Fasc. ii. p. 52, t. 9.

Hab. Mexico!

Var. ROSEA = *Malva rosea* Calques des Dess. Fl. Mex. p. 58; DC. Prod. i. p. 435. Foliis 5-lobis acutis, bracteolis ovatis sessilibus 3-nerviis, floribus roseis.

Hab. Mexico, *C. Jurgensen*, No. 529!

The bracteoles in the figure of *Meliphlea vitifolia* Zucc. vary considerably from the description in DeCandolle's Prodromus of the bracteoles of *Malva umbellata* Cav.

43. S. NUTANS Scheidw. in Fl. de Serres, vii. p. 221, t. 726.

Hab. Guatemala?

Species anomala.

44. S. CRISPIFOLIA. *Sida crispifolia* Cav. Icones, v. t. 419; DC. Prod. i. p. 465.

Hab. South America. Port Desire!

Species Chilenses non satis notæ.

45. S. MENDOCINA Phil. in Anales Univ. 1862, ii. p. 392.

Hab. Mendoza.

46. S. SESSILIFLORA Phil. in Anales Univ. 1872, p. 679.

Hab. Chili.

47. S. PETEROANA Phil. in Pl. Nuev. Chil. 1893, p. 9.

Hab. Andes. Prov. Curico, *Manuel Vidal.*

48. S. PULCHELLA Phil. *l. c.*

Hab. Nr. Coquimbo, *Cornish.*

49. S. CAPITULIFLORA Phil. *l. c.* p. 10.

Hab. Andes. Prov. Curico, *Manuel Vidal.*

50. S. ARENARIA Phil. *l. c.* p. 11.

Hab. Nr. Coquimbo, *Cornish.*

51. S. PLICATA Phil. *l. c.* p. 6.

Hab. Chili, nr. Valparaiso.

Species exclusæ.

Sphæralcea filicaulis Hemsl. = *Sida diffusa* H. B. K.
S. filicaulis var. *setosa* Hemsl. = *Sida diffusa* var. *setosa*.

XXIV. MODIOLA Moench. Meth. p. 619. Bracteolæ 3 liberæ. Carpella intus inter semina transversim septata.

1. M. MULTIFIDA Moench. Meth. p. 620. *M. caroliniana* G. Don, Gen. Syst. i. p. 465; Gray, Genera, ii. p. 72, t. 128. *Malva caroliniana* L.; DC. Prod. i. p. 435. *M. decumbens* Willd.; DC. *l. c.* p. 436. *M. prostrata* Cav.; DC. *l. c.* *M. urticifolia* H. B. K. Nov. Gen. et Sp. v. p. 215. *M. eriocarpa* DC. Prod. *l. c.* *Modiola reptans* St. Hil. Fl. Bras. Mer. i. p. 212. *M. prostrata* St. Hil. *l. c.* *M. urticifolia* et *eriocarpa* G. Don, *l. c.* *M. erecta* Lespinasse in Bull. Soc. Bot. 1859, p. 647.

Hab. Widely spread in America from Southern United States to Argentine Republic, Paraguay, and Uruguay! Juan Fernandez! Jamaica!

Modiola macropodia Phil. Pl. Nuev. Chil. 1893, p. 20 (*Malva macropodia* Steud. in Flora, 1856, p. 426), is evidently closely allied to the above.

2. M. LATERITIA K. Schum. *l. c.* p. 455, t. lxxx. *? Malva peduncularis* Hook. & Arn. in Hook. Misc. iii. p. 150.

Hab. Argentine Republic! Uruguay! Brazil, Prov. Rio Grande do Sul.

Dr. K. Schumann has transferred this plant from the genus *Malvastrum*, where it was formerly placed, to *Modiola*. See Journ. Bot. vol. xxix. p. 169, for synonymy.

Species exclusa.

Modiola geranioides Walp. = *Modiolastrum geranioides* Bak. fil.

XXV. MODIOLASTRUM K. Schum. *l. c.* p. 276. Bracteolæ calycis basi adnatæ vel a calyce remotæ. Ovula solitaria pro loculo, adscendentia. Dissepimentum a capidiorum dorso oriundum locullos in loculamenta bina superposita seperat.

* Bracteolæ calycis basi adnatæ.

1. M. MALVIFOLIUM K. Schum. *l. c.* p. 277. *Modiola malvifolia* Gris. Sym. ad Flor. Arg. p. 45.

Hab. Argentine Republic! Paraguay.

2. M. GERANIOIDES = *Modiola geranioides* Walp. Rep. i. p. 296. *Malva geranioides* Gillies MSS.; Hook. Bot. Misc. iii. p. 152. *Malvastrum Gilliesii* Baker in Gard. Chron. 1885, p. 166. *Malva Gilliesii* Steud. Nom. edit. 2.

Hab. Chili, nr. Quillota, *Gillies*! Argentine Republic. Parana!

* * Bracteolæ a calyce remotæ.

3. M. JAGGIANUM K. Schum. *l. c.* p. 278, t. liv. *Modiola reptans* Gris. MSS., non St. Hil.

Hab. Uruguay, *Lorentz*, Flora Entreriana, No. 1695.

This genus is intermediate between *Modiola* and *Malvastrum*. I have placed it next to *Modiola* on account of its habit, but it differs from the *Abutileæ* in the carpels.

CYPERUS FUSCUS IN DORSET AND HANTS.

By Edward F. Linton, M.A.

Within a few days of my brother's discovery of this plant near Ringwood, I searched for and found it in the neighbourhood of Bere Regis, in Dorset, having been stimulated to look for it by its recent detection in South Hants. If there were any ground for suspicion that the *Cyperus* may have been introduced near Ringwood,—and, judging from the character of the locality, I do not think there is the least,—there is none in the case of the Dorset habitat. I refrain from giving reasons, not wishing to denote either locality too clearly. The plant is not plentiful; it is a wonder how it has survived in such small quantity; but being native, as I believe it is, it may yet be found to occur in other suitable marshy places, in the South of England, if not further north; for it is most improbable that we should have hit on the only two localities in this part of the country. This *Cyperus* is very easily overlooked. Mr. J. C. Mansel-Pleydell tells me that he has more than once examined the very ground where I detected it, and seen nothing of it. This is not surprising: the marsh was, from what I could learn, less watery than usual, after the prolonged drought of last summer; and the little sedge is so inconspicuous, and so often half-buried in the loose herbage, that I doubt if I should have found it myself but for having it on the brain. About a fortnight later I happened to be in the same district again, and found, at a fresh spot nearly two miles away from the former one, some three more plants; one of them with very numerous stems, and full of ripening seed, which would, I hope, secure the propagation of the plant for other years.

Sir J. D. Hooker states that the plant was naturalised at the Chelsea station.* Some doubt has even been cast on the Surrey locality, as possibly not native. However this may be, there is evidence now, which cannot easily be disputed, for considering *Cyperus fuscus* a native plant. The character of the two-fold Dorset station is unassailable. If native in Dorset, that is strong presumption for viewing the Hants station, against which indeed there is no just suspicion, as native also. And the rational inference from its indigenous occurrence in these two adjoining counties, Dorset and Hants, is that the sedge is native, too, on Shalford Common,—unless some good evidence is forthcoming to the contrary.

The European distribution is so general that the wonder is, not to find it in these isles, but to find it so rarely. A plant that is spread over nearly the whole continent, from Middle and South Russia to Portugal, and from Sweden, Denmark and Belgium to the shores of the Mediterranean and the Levant, may well be expected to occur in more than two or three southern counties of England; and further research, in warm dry seasons especially, will be very likely to justify the expectation.

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* [See, for further information on this point, *Journ. Bot.* 1871, pp. 148, 212. —Ed. Journ. Bot.]

REPORT OF DEPARTMENT OF BOTANY, BRITISH MUSEUM, 1892.

By William Carruthers, F.R.S.

The principal addition to the Herbarium during the year has been the extensive herbarium of Mosses, Hepatics and Lichens formed by the late Mr. George Davis, of Brighton, and presented by his widow. It contains about 20,000 named and localised specimens, of which 9000 are Mosses, 6000 Hepatics, and 5000 Lichens. The plants are chiefly British, and supply several desiderata to the British collections, besides greatly adding to the representation of the distribution of the species.

The additions to the collections by presentation have consisted of 312 species from India, presented by C. B. Clarke, Esq., F.R.S.; 88 species from Swatow, China, by the Rev. P. T. Maclagan; 456 species from Africa, and 246 species from Sierra Leone, collected by G. Scott Elliot, Esq., of the Boundary Expedition, and presented by the Royal Society; 100 species from the Cape of Good Hope, by Messrs. MacOwan and Bolus; 162 species from Australia, by Baron von Mueller; 180 species from St. Vincent, presented by the West India Committee; 36 species of cultivated orchids, from H. Veitch, Esq.; and 32 species from Mr. Moore, of Glasnevin Gardens, Dublin; specimens of *Thonningia malagasica*, from the Rev. R. Baron, of Madagascar; fruits of *Banksia ornata*, from Baron von Mueller.

A collection of plants made by Mr. Alex. Whyte on Mount Milanji, a high mountain to the south of Lake Nyassa, has been received and named, and the new species described.

A collection of 199 cellular plants, from Professor Farlow; a small collection from Perak, from Dr. King; 170 species of Algæ from Australia, from Baron von Mueller; 28 species of Californian Algæ, from Professor King; 70 species of Algæ from the Cape of Good Hope, from W. Tyson, Esq.; and new or critical species of cellular plants from Major Willoughby Verner, Prof. E. Perceval Wright, Prof. Harvey Gibson, Mrs. Weber van Bosse, Rev. E. S. Marshall, Messrs. H. & J. Groves, E. A. L. Batters, C. T. Druery, H. Piggot, F. Q. Gell, W. G. Smith, Miss Woolward, and others.

Among the additions to the British Herbarium, by presentation, are the following:—261 species from the Rev. E. S. Marshall; 45 species from the Rev. T. S. Lea; 40 species from A. Bennett, Esq.; 42 named species and varieties of *Rubus* from Dr. de Crespigny; and interesting species from the Rev. W. R. Linton, Messrs. R. Lloyd Praeger and W. Whitwell, and Captain Wolley Dod. Mr. Clement Reid has presented 23 species of British fruits in continuation of his previous valuable contributions.

The following collections have been acquired by exchange:—111 specimens from North America, from Professor Britton; 273 Indian and Malayan plants, from Dr. King; 32 species of North American Myxomycetes, from Professor MacBride; 100 species of Appalachian Mosses, from Mrs. Britton; and 234 specimens of *Characeæ* from the herbarium of Alex. Braun, from the Director of the Royal Botanical Gardens, Berlin.

The following collections have been acquired by purchase:—300 species of European plants, from Dr. Schultz; 478 species from Spain, collected by Porta and Rigo; 362 species from Turkey, collected by Sintenis; 348 species from Dahuria, collected by Karo; 70 species from Syria, collected by Dr. Post; 117 species from Natal, by J. M. Wood; 195 species from Madagascar, collected by the Rev. R. Baron; 510 species from Bolivia, collected by Bang; 205 species from Paraguay, collected by Morong; 170 species from Western China, being the completion of the collection of Mr. Pratt; 494 Hepaticæ from the Amazon, collected by Spruce; 1968 species of cellular plants from different regions, from Professor Ralfs; 100 species of Algæ of Europe, from Roumeguère and Dupray; 50 species of Italian Algæ, from Dr. Levi-Morenos; 100 European Algæ, from Hauck; 25 species of *Characeæ*, from Migula; 400 species of European Mosses, from Sydow; 565 species of Brazilian Lichens, from Wainio; 505 microscopic preparations of Fungi, and a large collection of specimens of Indian Fungi, made by the late Dr. Barclay; 20 preparations of Fungi, by Herpell; 150 species of *Uredineæ*, by Sydow; 100 species of Fungi from Lombardy, from Cavara; 150 species of French Fungi, from Tempère; and 200 species of American Fungi, from Seymour and Earl.

William Sowerby, Esq., presented a model of *Clathrus cancellatus* made by the elder Sowerby, which has been added to the models in the Exhibition Gallery.

The collection of prints and drawings of plants has been increased by the presentation of 11 illustrations of the species of *Masdevallia*, by Miss Woolward; 19 photographs and 17 engravings of *Cycadeæ*, by Dr. Maxwell T. Masters; and 8 plates of Hepaticæ, by Mr. George Massee; and by the purchase of 21 original drawings of Fungi, by J. Bolton, of Halifax; and 1036 original water-colour drawings of Fungi, by Mr. Massee.

The large collection of sketches and water-colour drawings made, at the expense of Sir Joseph Banks, by Francis Bauer, of plants in the Royal Gardens, Kew, has been systematically arranged and mounted to secure their permanent preservation and easy reference.

SHORT NOTES.

Eleocharis acicularis (p. 309).—Would it not be more correct to speak of Mr. Praeger's submerged plant as a *state* rather than a *form?* and also of leaves rather than "stem" in a flowerless condition of the species? I have seen the plant, growing as he describes, in Surrey, and I think in Norfolk, in 1–3 ft. of water, with leaves of normal length; not indeed tufted, but creeping more freely in the soft mud than it can on moist ground, where there is usually some competition to check freedom of root-development. *E. palustris* is to some extent like it, creeping very shortly in the turf of a wet meadow, but far-creeping in shallow water where the soil is loose or sandy, and, though half-emerged, less inclined than

usual to flower in so aquatic a situation. It is not perhaps so very curious that *E. aicularis* should survive in a submerged position, where competition is *nil*, and be absent on adjoining ground where competition is often severe for so delicate and tiny a plant. It is more peculiar that the leaves in the submerged state are not more generally elongated, as Prof. Babington and Boswell seem to have found them. A fair parallel to this case may be found in *Littorella lacustris*, which is usually or always flowerless when submerged, shows no great difference between the two states (larger, when submerged, according to Babington), and at any rate in larger sheets of water is often altogether submerged, and entirely absent from the littoral margin.—Edward F. Linton.

Utricularia neglecta Lehm. and U. Bremii Heer? in Cheshire. —Last summer I found *U. neglecta* flowering sparingly in several ponds, and barren plants in a good many others, between Edge and Carden Parks, Cheshire. A plant from a pond near Tilston Church, which I took for an elongate form of *U. minor* (from which, however, it differs not only in size, but also in having bladders on barren stems as well as on the leaves) Mr. Ar. Bennett believes to be *U. Bremii*, but is unable to say definitely in the absence of flowers, which unfortunately were not produced.—A. H. Wolley Dod.

Epilobium hirsutum × obscurum in Cheshire. — Last summer I came across a patch of this hybrid by a pond-side in Edge Park, which the Rev. E. S. Marshall kindly named for me, adding that it has only twice before been noticed in England, both stations being in Surrey, and is unknown on the Continent. It was growing thickly on a space about a yard square, at the end of a border of *E. hirsutum*, but I saw none of the second parent in the neighbourhood. The plant is just intermediate between *E. hirsutum* and *E. obscurum*, differing from the former in being about half the size in all its parts, and much less hairy; its leaves are more rounded in at the base, and decurrent in evident raised lines; and its stigma is clavate, but separable into four with slight force. From the latter it differs in being larger and more hairy, with broader leaves; and the flowers are the colour of those of *E. hirsutum*, and about half their size. The stolons, from which the plant is freely reproduced, are those of *E. hirsutum*. I have dried some specimens for the Bot. Exch. Club.—A. H. Wolley Dod.

Lycopodium alpinum in Worcestershire. — During a few days' visit to Malvern in August last, I was fortunate enough to discover *Lycopodium alpinum* growing on the Worcestershire Beacon. Several subsequent careful searches which I made failed to produce another specimen, but probably the drought and intense heat of the past summer may account for this. My single plant was very small and barren, and was almost entirely concealed in the moss (*Dicranum*) with which it was growing. This appears to be the first authentic record of the plant from the Malvern Hills. There is an old record of the plant having been found on Hartlebury Common, in the county, by the Rev. C. Babington and Mrs. Walker in 1836. This record, which has been kindly sent me by Mr. Towndrow, of Mal-

vern Link, is quoted at length by Mr. W. Mathews in the *Midland Naturalist* for 1892, p. 118. The writer adds, however, "In Professor Babington's Herbarium! Now referred by him to *L. complanatum*. Extinct. First record." It may be added that no representative of the genus was known to the late Mr. Lees when he published his *Botany of Malvern* in 1868.—Freeman Roper, Jun.

Pyrola serotina Mlcq.—At p. 334 I remarked that I had not seen a specimen of *P. serotina* Mlcq. Since then I have examined a sheet of examples from Béthune (Pas-de-Calais) in the Kew Herbarium, and there seems no doubt that they are the same as the Dunes-de-Saint-Quentin plants, and probably also as the Lancashire plant, though they have larger leaves. Mr. A. Somerville has also kindly forwarded me specimens of *P. minor* from the sands of Ardeer, Ayrshire, gathered by Mr. J. Smith late in October; thus they are hardly in a condition for comparison, but, so far as they can be compared, they seem to be the same as specimens I possess from Norderney (East Friesian Islands) sent me by Drs. Focke and Buchenau. The author (Lantzius-Beninga) of the var. *arenaria* of *minor* relied principally on the smaller, but more rotund leaves, and the larger flowers. I find on the ordinary *minor* 1–4 bracts on the scapes, on the Ardeer plant 1–2 only, so that the plant does not seem to follow the var. of *rotundifolia* in producing a greater number of bracts than the type. The Ardeer specimens are $3\frac{1}{2}$–$5\frac{1}{2}$ in. high, the ordinary plant 6–12 in. high. The leaves are decidedly smaller, rounder, and the petioles shorter, the whole looking a good deal like small specimens of *P. media*. I have not looked specially whether it has been suggested; but I have a suspicion that the Pyrolas are semi-parasitic. — Arthur Bennett.

Pseva.—You reprint in the *Journ. Bot.* p. 343, a notice of Dr. Britton on *Pseva* as an "illustration of Dr. Kuntze's method of working," but you overlooked my notice to *Pseva* in *Rev. Gen. Pl.* 390, that I have not seen in this case the oldest publication of *Pseva* and based only on DC. *Prod.* and Pfeiffer's *Nomenclator*. My method of working was to check each restored genus-name in its first publication, and the *very few cases* I was unable to do so, *I stated every time such an exception*, if I deemed of having no right to reject a name. I hope you will correct your mistake in the next number of your Journal.—Otto Kuntze.

I willingly insert Dr. Kuntze's note, but it still appears to me that he is entirely responsible for the restitution of the genus, and for the naming of the four species which he places in it. The passage in his *Revisio* is as follows:—"Pseva Raf. (1809) Obs. ex Journ. Phys. 89 p. 261 (cfr. Pfeiff. nom. und DC. prod. vii. 795) = *Chimophila* Pursch 1814. Rafinesque reclamirt im Jahre 1819 l. c. die Priorität für seine schon 1809 gegebene Benennung. Pseva, allerdings mit dem Zusatz: mais le nom de Pursh est meilleur et plus significatif. Das letztere Motiv ist jedoch nicht rechtswirkend und die älteste Benennung hat zu gelten. Die Arten sind: Pseva umbellata (L.) [Nutt.], Menziesii (R. Br.)

[Spr.], maculata (L.) [Pursch], japonica [Miq.] OK. Die Citate in ( ) gelten für *Pyrola*, die in [ ] für *Chimophila*. Welche Art oder ob überhaupt eine Art von Rafinesque benannt ist, weiss ich nicht, da mir die betreffende älteste Quelle nicht zugänglich und 1819 keine Art benannt ist." The "method of working" to which I more especially referred was the practice of inventing a series of new names under a genus for the establishment of which no sufficient evidence was forthcoming. If Dr. Kuntze had followed the more seemly and until recently usual practice of leaving such rearrangements to monographers, we should have been spared the invention of four new and entirely useless names. I do not know why Dr. Kuntze speaks of "*Chimophila* Pursch." Pursh wrote *Chimaphila*: *Chimophila* was proposed by Raddius seven years later. I am sorry to find that I was in error in supposing (p. 343) that no new name had been substituted for *Jacksonia* R. Br. Prof. E. L. Greene* has replaced it by *Piptomeris*, a name under which Turczaminow described a single species referred by Bentham to *Jacksonia*: and proceeds to enumerate thirty-five species under this title. With the aid of the printer, he contrives to invent two fresh names: P. "dilalata" for J. dilatata Benth.; and P. "purpuascens" for J. purpurascens Muell. It is to be regretted that some more useful or at least less mischievous outlet cannot be found for the superabundant energy of which Prof. Greene seems to be possessed. —James Britten.

Utricularia intermedia in East Norfolk. — In August last we found this plant, in considerable abundance, in the very wet fenland bordering on Stalham and Barton Broads, and by the river Aut, in the same neighbourhood. The distribution of the plant in England, as recorded in the *Topographical Botany*, is very curious, jumping from Dorset and South Hants to Norfolk West (?), and then on to Northumberland, Westmoreland, and Cumberland. Mr. Bennett informs us that Watson queried Norfolk West, thinking that Kirby Trimmer's plant might be *U. neglecta*. Watson mentions insufficiently vouched records for Devon, Somerset, Bucks, and Gloucester. We cannot help thinking that it will be found in other fenland and peaty districts. Mr. Bennett's notes contain records for twelve Scottish counties, in addition to the eight given in *Topographical Botany*, showing that it is generally distributed throughout Scotland.†—H. & J. Groves.

Oxyria in North Lancashire. — On August 7th last, Mr. W. Duckworth, of Ulverston, found *Oxyria digyna* at Tilberthwaite, near Coniston, a new record for N. Lancs. I have seen specimens. —Lister Petty.

Corrections.—In the Rev. E. S. Marshall's paper on *Potentilla*-Hybrids (pp. 325–7) occur the following misprints, which it seems desirable to correct:—p. 325, line 2 from bottom, for "Ham Moor,

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* *Erythea*, 1893, pp. 114, 115.

† Since writing the above, we hear that *U. intermedia* has been recorded from East Norfolk by Mr. Geldart in *Trans. Norf. & Norw. Nat. Soc.* 1889-90.—H. & J. G.

near Alstonefield," read "Ilam Moor, near Alstonefield"; p. 326, lines 10, 11, for "Reap's Moor," "Longuor," and "Alstonefield," read "Reapsmoor," "Longnor," and "Alstonfield"; line 17, for "Newtonbutler, *Dr. Matheu*," read "Newtownbreda, *Dr. Mateer*." —W. H. PURCHAS.

NOTICES OF BOOKS.

Handbook to the Flora of Ceylon: containing descriptions of all the species of flowering plants indigenous to the Island, and notes on their history, distribution, and uses. By HENRY TRIMEN, M.B. (Lond.), F.R.S., Director of the Royal Botanic Gardens, Ceylon. With an Atlas of Plates, illustrating some of the more interesting species. Part I. Ranunculaceæ — Anacardiaceæ: with plates i—xxv. Published under the authority of the Government of Ceylon. London: Dulau & Co. [8vo, pp. xvi, 327: plates, 4to, i—xxv.]

IT is to be regretted that a notice of this important work has not been undertaken by some one who, from his acquaintance with the flora to which it relates, would be able to discuss it from a botanical standpoint. But as our attempts to secure such a reviewer have been unsuccessful, and as the book presents noteworthy features apart from its technical value, it seems desirable to call attention to these, leaving for some future occasion and abler critic a more detailed notice.

Dr. Trimen's name, since he left this country for Ceylon in 1879, has ceased to be familiar to British botanists. It may well be that later generations are unaware how completely the *Flora of Middlesex*, published in 1869, revolutionized the method on which local floras were constructed. It is not too much to say that that book has influenced every subsequent local flora worthy of the name; and it has always been understood that its execution was mainly due to Dr. Trimen, although another name also appears on the title-page. The same note of originality is struck by the Handbook now under notice.

Glancing through the various Colonial Floras which have been published or executed in this country, it is manifest that they have for the most part been undertaken by botanists whose knowledge of the plants described was derived mainly, and in most cases entirely, from herbarium specimens. The author of the *Flora Australiensis* was never in Australia, and, although working in close proximity to the Royal Gardens at Kew, very seldom examined living plants for his descriptions; the monographers of the incomplete *Flora of Tropical Africa* were never in that country; Mr. Baker's knowledge of the *Flora of Mauritius* is entirely derived from the herbarium; and so we might continue. The result in all these cases is the production of handbooks extremely useful for herbarium work, but by no means so suitable for use in the field. Moreover, the condensation necessary renders it impossible to give

notes on local uses and names, even when information as to these is forthcoming.

Dr. Trimen's aim is not so much the convenience of the herbarium botanist as "to enable observers in Ceylon to ascertain the name of any plant they may find growing wild." He would do for Ceylon what the Hookers and Babington have done for England, the good effect of which, in these days of minute investigation into structural details, is somewhat apt to be overlooked. He has given analytic keys, and his descriptions are, he says, "as little technical as I can make them, consistent with accuracy." These descriptions have "been made, whenever possible, from fresh living specimens"; such apparently trivial, but useful, particulars as the time of flowering and colour of flowers are given, with brief notes "on the history and nomenclature [both scientific and vernacular] of the species, on any special peculiarity in its structure, and on its properties, products, and uses." Some of these things are of small moment to us at home, but every one who has worked in the field knows their practical value.

It is in this way that the method of the *Flora of Ceylon* is distinct from all its predecessors, and Dr. Trimen is to be congratulated on the success with which he has carried out his plan. While, however, complimenting him on his work, we are inclined to think that the practical convenience of those who will use the book in the field might have been further consulted by a diminution of its bulk. The work is announced as forming two volumes of two parts each, with a hundred quarto plates. These latter can of course be left at home, but somewhat less substantial paper, and a certain economy in printing which might have been adopted without in any way interfering with the appearance of the book, would have rendered it much easier for use in the field. On the present scale, two parts will make a somewhat unwieldy volume, while four separate instalments are inconvenient to carry about. Perhaps a thin-paper issue may be contemplated for this purpose; if not, we beg to tender the suggestion.

The handsome coloured plates "are a small selection only from the extensive series illustrating the Ceylon flora which is preserved in the Library of the Botanic Gardens at Peradeniya. This was commenced more than fifty years ago, and has been steadily continued under successive Directors. It now numbers several thousand drawings, and has been wholly the work of three members of one Sinhalese family, employed successively as draftsmen on the Garden staff—Haramainis de Alwis, and George and William de Alwis, his sons."

We understand that the second part of the Flora is well advanced towards completion, and we trust that the blight which so frequently falls upon works of this kind will in no way impede its progress.

The Vegetation of the Jura Lakes.

Recherches sur la Végétation des Lacs du Jura. Par M. Ant. Magnin. (Extrait de la Revue Générale de Botanique, Tome 5 (1893), pp. 241–277, et 303–316.) Paris: Paul Klincksieck.

In various publications Dr. Magnin has given particulars of his exploration of the sixty lakes of the Jura. He here brings together all these, and gives a complete review of his work, "in the depth, the temperature, the coloration, the transparency, the vegetation, the biological conditions, &c.," extending from 1890 to the present year.

Dr. Magnin divides these lakes into three series, "lac normal," "lac de tourbières," and "lac-étang," the first of course being almost always the deepest, and the last usually the shallowest. He traces out certain zones of vegetation in the first two series of lakes:—1, the zone of *Carex;* 2, of *Phragmites;* 3, of *Scirpus;* 4, of *Nuphar;* 5, of *Potamogeton;* and 6, of *Characeæ*. These of course must be taken in a general sense, not as strictly exact, as in early spring, when the water-level is high, Charas and Nitellas will often be gathered in the *Scirpus* zone (certainly in England); later, as the water recedes, the *Characeæ* become dried up, and other forms are found in the deeper water. In hot summers the water will recede so far as to leave such plants as *Cladium* dry; in this state it becomes stunted, and rarely flowers. And continued drought will expose even the Potamogetons, some of which (notably *P. natans*) will continue to grow, flower, and fruit, but with exceeding short petioles and peduncles.* In low grounds this does not seem to affect the size of the fruit, but over 2000 ft. altitude the fruit is sensibly smaller in shallow water; and *P. lucens* will not survive the exposure to the air for long. In this respect a great deal of careful work is yet required to work out the conditions of growth of our submerged water plants under unlikely conditions.

The vegetation of these lakes is very similar to many Scotch ones, the only plants that are foreign to our Flora being *Nuphar juranum* n. sp., *N. sericeum* Lange, and *N. Spennerianum; Chara jurensis* Hy and var. *Magnini* Hy (both new), *Nitella flabellata*, *Trapa natans*, and *Naias major* (the last in England in three stations; not in one, as recently reported).

Of these, *Trapa natans* is decidedly the most interesting; its remains were found associated with *Naias major* in Norfolk, and recorded by Mr. Clement Reid in his interesting series of papers on Norfolk geology; but it has died out in Britain, and seems a decreasing species in Europe. One of the characteristic features of aquatic botany in the lowlands is the occupation by one species of large spaces, to the complete exclusion of any other submerged plant—thus *Ceratophyllum* will cover a ditch or the backwater of a river for yards with a dense mass of vegetation often 6 to 9 in. in thickness; further on by a similar growth of *Potamogeton natans* or

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* See *Journ. Bot.* 1893, p. 182.

Myriophyllum; and on clearing out a space one will see that there is absolutely no vegetation under them; on the other hand, spaces will be found where from three to fifteen species will be found in the same space. The "roading" or clearing of ditches and dykes no doubt influences this, and by depositing at certain points large masses of seeding plants perhaps produce the above result. Often in small masses, it can be traced to a single central plant. Dr. Magnin mentions that this takes place even in these Jura lakes to a certain extent. Thus the character of lacustrine botany is not so much the number of species, but the large masses of individual plants.

Dr. Magnin's observations have resulted in adding to the flora the before-mentioned rarities, and in increasing the Jura flora by *Potamogeton obtusifolius*, *Chara ceratophylla*, *C. curta*, *C. contraria*, *Nitella tenuissima*, *N. flabellata*, and (this year) *Potamogeton nitens* Weber, a very rare French species. To the flora of France he has added *Nuphar sericeum* Lang, *Potamogeton coriaceus* Fryer, *P. prælongus* Wulfen, *P. Friesii* Rup., and *P. undulatus* ? Wolfg. Of these *P. prælongus* was reported by Brébisson in Normandy, but his plant was a form of *nitens!* The localities of *prælongus* are Lac de Saint-Point, Boulu, Val-dessous, and Bellefontaine. Dr. Magnin has since found *prælongus* plentifully in the province of Doubs; it certainly is strange it should so long have escaped notice.

One would like to see a similar exploration of our British lakes. Ireland bids fair to have hers examined; will not some botanist give up "rarity hunting," and do some such work for the honour of British Botany?

ARTHUR BENNETT.

An Elementary Text-book of Agricultural Botany. By M. C. POTTER. M.A., F.L.S. Methuen & Co. 8vo, pp. xii. 250; 99 cuts. 3s. 6d.

THOUGH there seems to be a plethora of botanical text-books, yet Professor Potter's book is the first written with a direct view of the needs of the agricultural student, and therefore it supplies a want felt by those teaching in farming colleges and other places of technical agricultural instruction.

The first portion deals with the cell, and then treats of the root, skin and leaf, all from both physiological and morphological points of view; and the text is illustrated by figures from Sachs, Strasburger, Detmar, Vines, and others. The reproductive portions of the plant—flower, fruit and seed—occupy the next three chapters, followed by a chapter on plant-food, containing some of the tables from Johnson's *How Crops Grow*, and the results of analyses for nitrogen by Lawers and Gilbert. The author uses the term "vegetative reproduction" in a chapter on grafting, laying, tillering, &c., and this term does not seem so appropriate to these processes when they occur either in nature or by man's aid, as the older term of "multiplication" as opposed to "reproduction." The subject of pathology is of great interest to agriculturists; and it is unfortunate that Professor Potter has only been able to devote one chapter to it. Even so, it would surely have

been better to give a mere list of some of the more important diseases to which cultivated farm plants are subject in Britain, instead of the five diseases which are alone treated. Surely in a book of this sort, to pass without mention such diseases as "Bunt," "Damping-off," and "White-rust," not to speak of the fungi attacking fruit and timber trees, is a mistake; and we feel it would have been better to leave the subject altogether alone than to treat it in so sparse a manner.

The latter part of the book is systematic (in a botanical sense); its eccentric arrangement hardly justifies such a description. The Grasses appear first, then Leguminosæ, and after both a chapter called "Classification of plants," which includes all other plants, but refers back to the portions on Grasses and Leguminosæ. The descriptions of the Grasses are very meagre, and the portion, "Determination of Grasses," will not by itself, or even with the plates, help the student to identify species. For example, *Poa pratensis* is described as "Smooth meadow grass, recognised by its roots keeping near the surface. By some authorities it is considered to be a weed." No doubt some of the farm students into whose hands this book may come will be able to amplify and perhaps amend this and other descriptions. Throughout the book are numerous, and in most cases instructive, woodcuts, chiefly culled from German text-books; the type is large and clear; so that apart from its faults of omission and rather curious arrangement, it is a text-book which no doubt will be of use to the class for which Messrs. Methuen are bringing out the "University Extension Series" to which it belongs.

J. B. C.

Romance of Low Life amongst Plants. By M. C. Cooke, M.A., LL.D., A.L.S. (Society for Promoting Christian Knowledge.) 1893. 8vo, pp. vii, 320, figs. 60. Price 4s.

There must still be in these piping times a number of innocent people who delight to hear of the wonders of Nature, for whom the search after truth has no attraction if it be not marvellous in its revelation. They have persisted since the times of Sir John Mandeville, and would welcome a new Scythian lamb even more eagerly than the modern tales of astronomers, which now and then seem "a bit stretched." A writer in *Good Words* for last October, in speaking of the colour of what he imagines to be the vegetation of the planet Mars, says, "M. Flammarion suggestively observes, there was a period in the many-centuried story of our own globe—in the age of the lycopods—when the predominant hue of our flora was not green but a ruddy yellow, 'quite Martian in character.'" It is indeed possible, but M. Flammarion knows too much. If this is the way astronomers take in arriving at their facts, botanists will begin to go back to the healthy old idea that the sun goes round the earth.

To return to Dr. Cooke's account of those romantic organisms, the cryptogams; if such a book had to be written it is plain that he

is the man to write it. He has had much experience in writing popular books, and knows just the kind of thing that tickles. He also knows when to do some "fine writing," and to drop into poetry, &c. Judged by the standard of such literature, it is not badly done, and if there be any fault it is in the right direction; I mean some of the statements appear to be needlessly romantic. Speaking of the "dualism of lichens" (why, by-the-bye, do lichenologists speak of Schwendener as the "high-priest"?—the Christian Knowledge Society's subeditor must have let slip the passage, "The high-priest Schwendener thus expressed his dream," &c.) Dr. Cooke says, "This hypothesis has so few adherents, and those few of such little eminence or authority," &c. It is clear that several people must now take a back seat. The common herd, consisting of the writers of our botanical books (except Dr. Cooke's) and the professors in our universities and colleges—this scattered remnant ought not to keep up the farce any longer. Seriously, this and much more on the same subject is more than romantic—it is intemperate statement, and surpasses the license accorded to romance writers. On page 6 we read, "In the *Florideæ* the sexual organs of reproduction are gonidia, four of which are usually formed in a mother-cell, and hence termed 'tetragonidia.'" I find other passages marked in my copy, but why proceed with them?

The Index to this book resembles that of *Grevillea* and other publications in which Dr. Cooke has had a hand or left a tradition. "What is Nostoc?" indexed under "What," is amusing enough; but "The Comma bacillus," "The destroyer," both indexed under "the," without anything under "comma," "bacillus," or "destroyer," is surely a record.

G. M.

ARTICLES IN JOURNALS.

Bot. Centralblatt. (Nos. 45, 46). — H. Heiden, 'Anatomische Charakteristik der Combretaceen.' — (No. 45). M. Miyoshe, 'Die essbare Flechte Japans' (*Gyrophora esculenta*, sp. n.).

Botanical Gazette (Oct. 16). — J. G. Jack, 'Fructification of *Juniperus*' (1 plate).— D. M. Mottier, 'Development of embryo-sac in *Acer rubrum*' (1 plate). — M. A. Nichols, 'Achenial hairs of *Compositæ*' (1 plate). — H. L. Russell, 'Bacterial flora of Atlantic Ocean near Wood Holl, Mass.' (1 plate). — D. T. MacDougal, 'Intertwining of Tendrils.'

Bot. Zeitung (Nov. 1).—E. Crato, 'Morphologische und mikrochemische Untersuchungen über die Physoden.'

Bulletin de l'Herb. Boissier (No. 10).—C. DeCandolle, 'L'Étude du genre *Alchimilla*' (2 plates).— A. Sertorius, 'Zur Kenntniss der Anatomie der *Cornaceæ*.' — A. Rodrigue, 'Sur la structure du tégument séminal des Polygalacées.' — J. Freyn, 'Neue Pflanzenarten der Pyrenaïschen Halbinsel.'

Bull. Torrey Bot. Club (Oct.).—A. Schneider, 'Probable Biology of Plasomen.'—A. F. Foerste, 'Botanical Notes.'—B. D. Halsted, 'Dropsical Pelargoniums.'—E. G. Britton, 'Notes on N. American *Orthotrichum*.' — G. F. Atkinson, 'Unequal Segmentation and its significance in primary division of embryo of Ferns.' — Id., 'Two perfectly developed embryos on a single prothallium of *Adiantum cuneatum*.'

Erythea (Nov.). — E. L. Greene, 'Novitates Occidentales.'—J. G. Lemmon, Bibliography of Monterey and Knobcone Pines.—I. L. Blockman, 'Californian Herb-lore.' — F. v. Mueller, 'Indefinite stamens and subsessile pods in *Cleome*.'

Gardeners' Chronicle (Oct. 28).—*Bolbophyllum Ericssoni* Kränzlin, sp. n.—(Nov. 4). *Kniphofia citrina* Baker, sp. n.—*Cirrhopetalum ornatissimum* (fig. 91). — R. Baron, '*Eulophiella Elisabethæ*.' — (Nov. 11). *Furcræa albispina* Baker, sp. n.—(Nov. 18). *Coleus Penzigii* Baker, sp. n.

Irish Naturalist (Nov.). — N. Colgan, 'Notes on Flora of Co. Dublin.'

Journal de Botanique (Oct. 1, 16). — L. Guignard, 'Localisation des principes actifs chez les Capparidées, etc.' — E. Mer, 'Sur une maladie des branches de Sapin causée par le *Phoma abietina*.' — P. Hariot, '*Œcidium carneum*.'

La Nuova Notarisia (Aug., Sept.). — P. Pero, 'I laghi alpini Valtellinesi.' — O. Borge, 'Uebersicht der neu erscheinenden Desmidiaceen-Litteratur.'

Midland Naturalist (Nov.).—W. H. Wilkinson, 'Lichens of the Isle of Man.'—J. E. Bagnall, 'Flora of Warwickshire.'

Naturalist (Nov.).—J. T. Burgess, Plants of Spilsby, N. Lincolnshire.

Oesterr. Bot. Zeitschrift. (Nov.). — S. Murbeck, *Veronica poljensis*, sp. n. — P. Taubert, *Trifolium ornithopodioides*. — P. Magnus, 'Zur alpinen Verbreitung der *Chrysomyxa Abietis*.' — J. Freyn, 'Plantæ novæ Orientales.' — K. Polák, 'Zur Flora von Bulgarien.' — R. H. Franzé, 'Ueber einige niedere Algenformen.' — A. Nestler, 'Die Perldrüsen von *Artanthe cordifolia*.'

Trans. Linnean Soc. London (Botany, iii. pt. 9: Nov.). — H. N. Ridley, 'Flora of Eastern Coast of Malay Peninsula' (6 plates).

BOOK-NOTES, NEWS, &c.

At the meeting of the Linnean Society on Nov. 2nd, Mr. Spencer Moore read a paper on the phanerogamic botany of the recent expedition to Mato Grosso, upon which he acted as botanist. The expedition started from Cuyabá, first visiting the Chapada Plateau to the east of the city, where many plants were collected. Thence a journey was made to the new settlement of Santa Cruz (Barra des Bugres), on the Paraguay river, about half-way between Villa

Maria and Diamantino. The flora here is of mixed character, nearly 37 per cent. of the plants being common to Tropical South America, upwards of 27 per cent. occurring in the North Brazil-Guiana province of Engler, with 20·5 per cent. common to that province and the South Brazilian, and only 13 per cent. of South Brazilian types. From Santa Cruz a party worked its way through the primæval forest northward to the Serra de Tapirapuan. The forest flora is markedly Amazonian in character, nearly 50 per cent. of the plants collected being natives of Amazonia or the countries bordering thereon, or at least most nearly related to such, while the proportion of species common to Tropical America falls to rather more than 28 per cent., and the South Brazilian element is present only to the extent of 9·5 per cent. Returning to Santa Cruz, the Rio dos Bugres and Rio Brasinho were partly explored, and the Paraguay ascended to the neighbourhood of Diamantino. The party then came down the Paraguay to Corumbá, where many plants of interest were found. The expedition was finally abandoned at Asuncion. Among the Amazonian plants collected at Santa Cruz and in the neighbourhood may be mentioned *Randia Ruiziana*, *Bertiera guianensis*, the Loranthad *Oryctanthus ruficaulis*, *Cattleya superba*, *Epidendrum imatophyllum*, *Rodriguezia secunda*, &c. The Cycad *Zamia Brongniartii* is a native both of Santa Cruz and of the Tapirapuan Campos. The collections include close upon 700 species, of which rather more than 200 are considered to be new. There are eight new genera, two of which are Anonaceous, and one each referable to *Scrophulariaceæ*, *Artocarpeæ*, *Euphorbiaceæ*, *Aroideæ*, *Irideæ*, and *Gramineæ*. Specimens, photographs, and a map, the latter constructed by the Messrs. Storm, leaders of the expedition, and embodying the geographical discoveries, were exhibited.

The *Nuovo Giornale Botanico Italiano*, for which Prof. Caruel has hitherto been responsible, will, on and after January next, be published by the Società Botanica Italiana. No other change will be made in the mode of publication.

In reference to our paragraph on the Flora of St. Vincent (p. 351), we learn that it is impossible to assign the papers published in the *Kew Bulletin* to single individuals. We regret that our reference to the absence of information as to the authorship of the Flora implied a want of recognition of the services of the Kew Herbarium staff, and this we withdraw.

The volume (xxv.) of the *Journal of the China Branch of the Royal Asiatic Society*, recently issued at Shanghai, is devoted to a new instalment of Dr. Bretschneider's valuable 'Botanicon Sinicum,' of which we hope to say more at a future period.

The Editor of *Erythea* seems to be under the impression that the Clarendon Press is connected with Kew. In his November number he says that we "set down" the "premature circulation" of the prospectus of the *Index Kewensis* "as a fault of Kew": but a reference to p. 317 will show that we put the blame on the right shoulders. Mr. Jepson also wants to know the exact date of the publication of the *Index*: it was issued on the 6th of September,

but we fail to see that the actual day of the month is of any importance.

Mr. David McArdle publishes a paper, "On the Hepaticæ of the Hill of Howth," in the *Proceedings of the Royal Irish Academy* (3rd S. iii. No. 1). He enumerates thirty-six species, two of which, *Cephalozia Francisci* and *Anthelia Juratskana*, are new to Ireland, and his paper is illustrated by plates of these.

Botanical students who are in the habit of writing plant-descriptions will find *Young's Botanical Schedules* a great help in drawing up an orderly and complete account of their specimens. These schedules, which are of handy size and printed on good paper, are supplied by Ashfield & Young, of 82, Bridge Road West, Battersea, in books containing twenty-five, price sixpence, post free. The same firm has also issued, at the same price, a small Key-table to the characteristics of the principal British Natural Orders, compiled by Mr. G. W. Young. This little work of fifteen pages was originally prepared by the author for his own use, but the appreciation of its utility by his fellow-workers has induced him to proffer it to others, to "enable them without trouble to identify any given specimen, and refer it to the order to which it belongs." This is evidently a slip; there is no question of identification, as the table does not carry one beyond the natural order. It is a neat little book, and, as far as it goes, accurate and well arranged, and as long as the plant is not exceptional in its order the student will not find any difficulty in so far running it down. Orders in which important deviations from the type occur are indicated by a ?, but no account is taken of the deviations. Thus the buttercup is given as the type of *Ranunculaceæ*, while the student is left quite in the dark as regards the monochlamydeous plants of the order, and would be stumped at once by *Clematis* or *Anemone*.

Mr. Fawcett has issued a *Provisional List of the Flowering Plants of Jamaica*, on the lines of the *London Catalogue*, which will no doubt be useful. It is based on Grisebach's *Flora of the British West Indies*, but includes references to later works, although it does not profess to be a complete list for the island.

OBITUARY.

Friedrich Traugott Kützing, the celebrated phycologist, who died at Nordhausen, where he was a Professor in the Realschule, on September 9th, was born at Ritteburg, near Artern, on December 8th, 1807. For many years his botanical activity had ceased, and some six years ago most of the younger generation of phycologists were surprised to discover that he was still alive from an account of the celebration of his eightieth birthday by his botanical and other friends. He was the most voluminous writer on Algæ, and though his books all exhibit marks of rapid production, they undoubtedly served their purpose, and some of them still serve it.

His passion for the classification of Algæ included the whole group in its widest sense, from Diatoms and *Cyanophyceæ* upwards, fresh-water and marine. His method was rarely exclusive of any described form, but he "made increment of anything," and thus largely increased the catalogue of names of Algæ. There are stages in the development of a study when such work is valuable, and Kützing worked at a period when it was even necessary. The more critical labours of J. G. Agardh, happily still with us and at work, followed and reduced to a scientific system much that was a chaotic assemblage of names in Kützing's hands. He did very much the same kind of work as Saccardo has recently done for the Fungi and De Toni is now doing afresh for the Algæ, making in fact a new Census to the systematic study of these groups and their literature.

He began by studying the fresh-water forms and the Diatoms, and published his decades of German Fresh-water Algæ, 1833–36, and a *Synopsis Diatomacearum* in 1834. Ten years later, his best known work on Diatoms appeared, *Die Kieselschaligen Bacillarien oder Diatomeen*. The titles of two papers he published about this period, *Die Umwandlung niedrer Algenformen in höhere* and *Ueber die Verwandlung der Infusorien in niedre Algenformen*, exhibit the stage of development of Phycology at this time. His *Phycologia Generalis*, a most notable production, belongs to this period, and following it a few years later, *viz.*, in 1849, his *Species Algarum*. The great work of Kützing's life, however, was the *Tabulæ Phycologicæ*, in nineteen volumes. Its publication was begun in 1845, and completed in 1869. This book, which every working phycologist refers to daily, is a monument of his diligence and zeal for his study, and, more than all his other books together, has exalted his name among botanists. In the preface to the nineteenth volume there is a pathetic account of the numerous adverse circumstances, ranging from careless printers to wars of nations, &c., that combined to obstruct the production of that great book. Many of the plates, he tells us, were drawn under circumstances of "deep sorrow and anxiety by the sick-bed and death-bed of beloved children." He was not fortunately inspired in two books, outside his proper subject; the *Grundzüge der Philosophischen Botanik*, and *Die Sophisten und Dialektiker, die gefährlichsten Feinde der wissenschaftlichen Botanik*. The latter was a polemic against Schleiden, and a somewhat dull production for such literature. His herbarium of Algæ has been for many years in Leyden, and his Diatom collection (some 2000 specimens) was acquired through Eulenstein by the British Museum about the same time.

Though he at no time made any notable discovery of morphological interest, or did any great feat of scientific systematic arrangement, his name will live in the history of Phycology, and be honoured for well-directed diligence and energy in bringing together great bodies of scattered facts and records.

G. M.

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